

Site: medley Farm

Break: 7.4

**MEDLEY FARM NPL SITE
GAFFNEY, SOUTH CAROLINA**

REMEDIAL DESIGN AND REMEDIAL ACTION

REMEDIAL ACTION WORK PLAN

CONSTRUCTION MANAGEMENT PLAN

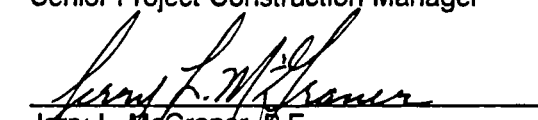
CONSTRUCTION QUALITY ASSURANCE PLAN

February 1994

***Prepared for the
Medley Farm Site Steering Committee***



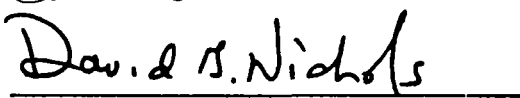
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DOCUMENT CONTROL COVER SHEET

**REMEDIAL ACTION WORK PLAN
CONSTRUCTION MANAGEMENT PLAN
CONSTRUCTION QUALITY ASSURANCE PLAN**

**Medley Farm Site
Gaffney, South Carolina**

REVISION NO.	ISSUE DESCRIPTION	ISSUE DATE
0	Working Copy - Issued for Client Review	10/29/93
1	Working Copy - Issued for US EPA Review	11/12/93
2	Final Copy - Issued for US EPA Approval	2/18/94

ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations are utilized in the Remedial Action Work Plan, Construction Management Plan, and Construction Quality Assurance Plan:

ACRONYM / ABBREVIATION	DESCRIPTION
BAQC	Bureau of Air Quality Control of SC DHEC
CFR	Code of Federal Regulations
CQA	Construction Quality Assurance
IQAT	Independent Quality Assurance Team
MFSSC	Medley Farm Site Steering Committee
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
O & M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PRD	Preliminary Remedial Design
QA	Quality Assurance
QC	Quality Control
RA	Remedial Action
RA SAP	Remedial Action Sampling and Analysis Plan
RD	Remedial Design
RMT	RMT, Inc. - Greenville, South Carolina
ROD	Record of Decision
SC DHEC	South Carolina Department of Health and Environmental Control
SOW	Scope of Work
SVE	Soil Vapor Extraction
US EPA	United States Environmental Protection Agency

Section 1 PROJECT DESCRIPTION

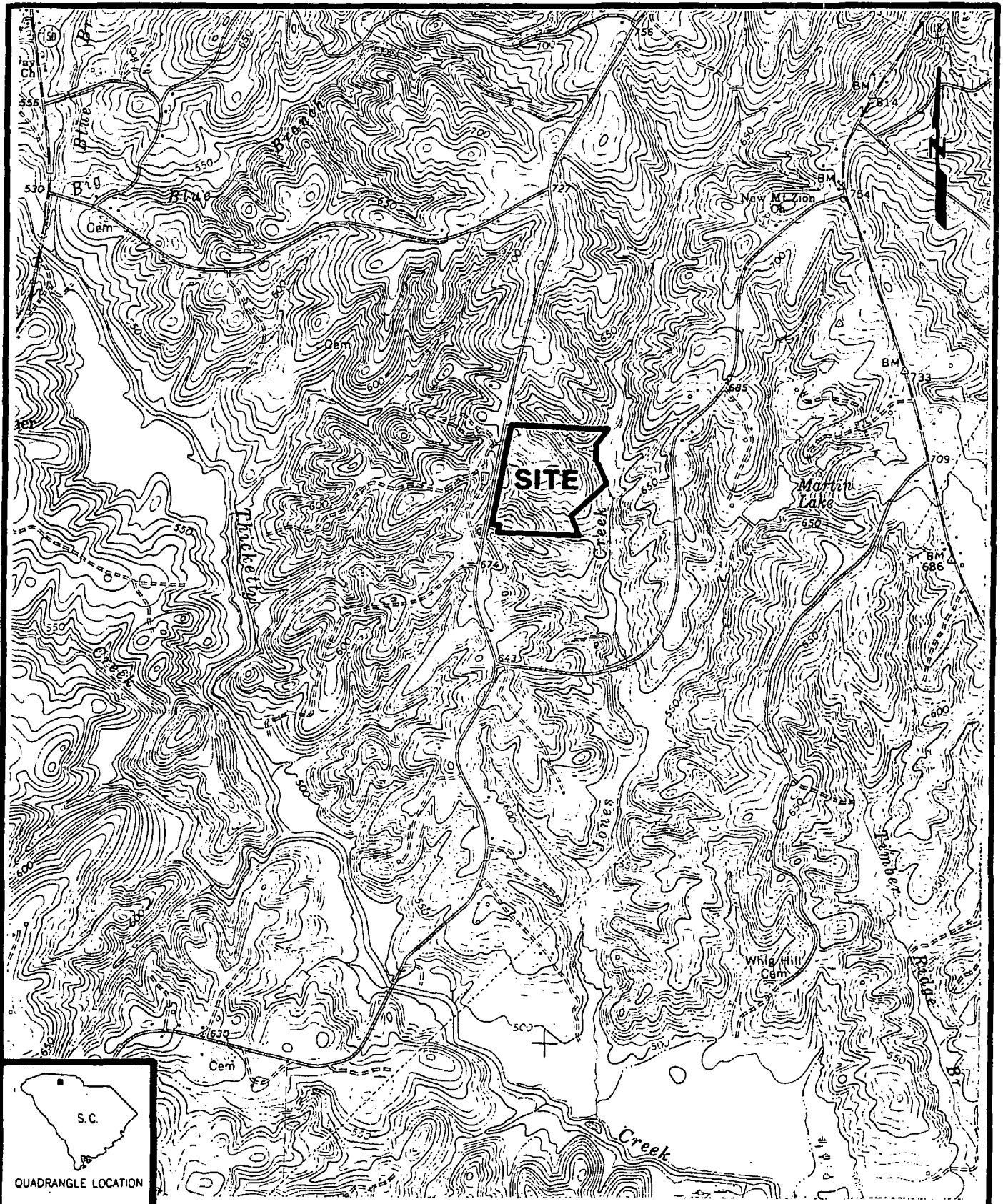
1.1 Background

The Medley Farm property consists of 61.9 acres of rural land located approximately six miles south of Gaffney, South Carolina in Cherokee County. The Medley Farm Site (Site) as defined in the Record of Decision, occupies approximately seven acres of the 61.9 acre tract. The location of the Medley Farm property and Site are shown on Figure 1-1. Land surrounding the site is primarily pasture land and forest. Land use in the area is primarily agricultural and light residential. No change in land use of the Medley Farm property is expected in the near future.

The Medley Farm property is currently owned by Ralph C. Medley, who acquired the property from William Medley in 1948. Prior to the mid-1970s, the property was maintained as undeveloped woodlands and pasture. Based on available information, the disposal of drummed and other solid waste materials at the Site began in 1973 and was terminated in June 1976. The South Carolina Department of Health and Environmental Control (SC DHEC) visited the Site in 1983. At the time of this visit, SC DHEC estimated that approximately 2,000 55-gallon drums were present on-site. Drums were found in open pits, several small lagoons, and scattered on the ground. In addition to the 55-gallon drums, there were numerous plastic containers of various sizes.

SC DHEC informed the U.S. Environmental Protection Agency (US EPA) of site conditions, and US EPA visited the Site to collect samples of the soil for analysis. An immediate removal action was subsequently initiated by the US EPA pursuant to Section 104 and other provisions of the Comprehensive Environmental Response, Compensation, and Liability act of 1980 (CERCLA). A total of 5,383 55-gallon drums and 15-gallon containers were removed from the Site. Affected solid waste and soils, totaling 2,132 cubic yards, were taken to an approved hazardous waste landfill for disposal. This interim removal action was completed on July 21, 1983.

SC DHEC revisited the Site in 1984 to perform additional site investigations and install a ground water monitoring well (MD2A). Soil samples from two boreholes and a ground water sample collected from the newly installed monitoring well were analyzed for volatile organics, drinking water metals, and acid and base-neutral organic compounds. The results of the soil analyses identified the presence of methylene chloride and 1,2-dichloroethane at depths up to 10 feet.



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FIGURE 1-1
SITE LOCATION MAP
SCALE: 1"=2000'

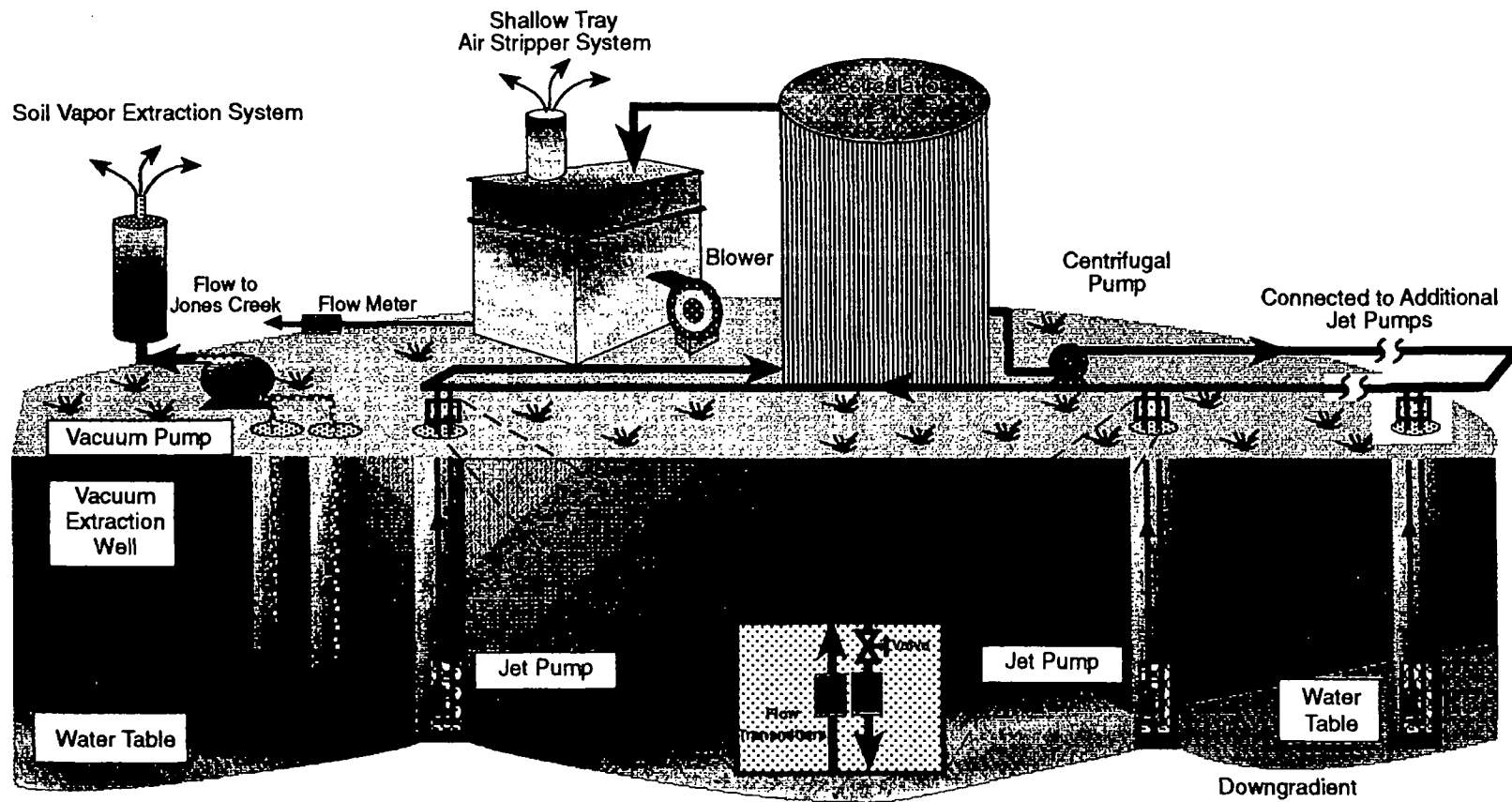
MEDLEY FARMS
GAFFNEY, SC.

The Medley Farm Site was proposed for inclusion on the National Priority List (NPL) in June 1986 and was finalized on the NPL in March 1990. The Remedial Investigation (RI) was conducted on behalf of the Medley Farm Site Steering Committee (MFSSC) by Sirrine Environmental Consultants (SEC) and occurred in two phases. Phase I began in January 1988 and ended with the submission of a draft RI report in March 1990. To address data gaps identified during the Phase I RI, a Phase II RI was conducted. A revised RI report including Phase II results, was submitted to US EPA in November 1990. The Feasibility Study (FS) for the Medley Farm Site was delivered to US EPA in December 1990.

On May 29, 1991, the United States Environmental Protection Agency (US EPA) issued its Record of Decision (ROD) for the Medley Farm Site. This document set forth the Agency's rationale and selected remedy for addressing affected ground water and soils identified at the site. The US EPA's Medley Farm ROD was based on the findings of the Remedial Investigation/Feasibility Study (RI/FS) conducted by the MFSSC's technical consultant, Sirrine Environmental Consultants, Inc. On October 9, 1991, the MFSSC formally entered into a Consent Decree outlining the basis for Remedial Design and Remedial Action at the site. The Consent Decree was formally entered by the United States District Court on March 27, 1992. The members of the Medley Farm Site Steering Committee have jointly agreed to implement the remedy defined by the ROD, the Consent Decree and Statement of Work (SOW), which is a part of the Consent Decree. The ROD and SOW comprise the primary technical resource documents that have been used during the design of the remedy described herein.

RMT, Inc. (RMT) was retained by the Medley Farm Site Steering Committee to develop and implement the ROD-selected remedy. Figure 1-2 represents the Conceptual Process Approach of Ground Water Recovery and Soil Vapor Extraction Treatment Systems for this remedy developed by RMT for the Medley Farm Site.

As a part of the required project deliverables, RMT prepared and submitted a Remedial Design Work Plan to the US EPA and the South Carolina Department of Health and Environmental Control (SC DHEC) for review and approval. This document described the general approach and schedule for completion of the Remedial Design portion of the RD/RA. The US EPA formally approved RMT's RD Work Plan for the Medley Farm Site on August 24, 1992.



The Preliminary Remedial Design (PRD) was submitted for US EPA review and comment on November 19, 1992. Agency approval of this document occurred on December 23, 1992. The Prefinal Remedial Design Report was submitted for Agency review on May 28, 1993.

The Final Remedial Design Report was submitted to the US EPA on August 27, 1993 to address Agency comments to the Prefinal Design Report in accordance with the approved RD project schedule. This Final Remedial Design Report was prepared and submitted in accordance with the requirements of the Medley Farm ROD, Consent Decree, SOW, and RD Work Plan. The US EPA approved the Final Design Report on September 30, 1993. Following approval, RMT began work upon the next significant project milestone for the RD/RA, the Remedial Action Work Planning documents.

The Remedial Action Work Plan, Construction Management Plan, and Construction Quality Assurance Plan were developed concurrently and incorporated under one cover for purposes of more effective document development and utilization. These documents along with the Construction Health and Safety/Contingency Plan, contained under a separate cover, have been prepared and submitted in accordance with the requirements of the Medley Farm ROD, Consent Decree, and SOW.

1.2 Purpose and Scope

The purpose of the Remedial Action (RA) Work Plan is to provide a detailed plan of action for the safe and efficient implementation of the Medley Farm Site RA. This document is developed in conjunction with the Construction Management Plan, the Construction Quality Assurance Plan, and Construction Health and Safety Plan/Contingency Plan. These documents represent major project deliverables which are being developed and submitted to the US EPA for review and approval prior to the implementation of the RA in accordance with the Medley Farm ROD, Consent Decree, and SOW. The Remedial Action will consist of the required activities to fully implement the response actions selected in the ROD prior to the commencement of operation and maintenance and long - term performance monitoring activities.

1.2.1 RA Work Plan

The RA Work Plan contains a comprehensive description of the response actions to be performed and more specifically contains the following elements for the effective implementation of these response actions as follows:

- Remedial Action Construction Schedule reflecting each of the required activities and the submission of each deliverable required during RA Construction in accordance with the Medley Farm Site Consent Decree and the SOW;
- Summary of the applicable RA regulatory requirements;
- Remedial Action project delivery strategy;
- Community Relations support activities;
- Procurement methods, phasing alternatives, contracting strategy, and contractor and equipment availability;
- Comprehensive descriptions of Initial Sitework, Well Installation, and Treatment Systems Installation activities and operational testing, demonstration, and start-up of equipment and systems components;
- Prefinal and Final Inspection procedures; and
- Post - Remedial Action Construction activities including the completion and submittal of the Remedial Action Report, commencement of treatment systems operation and maintenance, and completion and submittal of record and "as - built" documents.

1.2.2 Construction Management Plan

The Construction Management Plan was developed to provide a plan for the project management of the Remedial Action construction work in accordance with the Medley Farm Site Consent Decree and SOW. This interactive plan contains the following elements to reflect specific implementation, management, and coordination requirements:

- Project Management Team organization including responsibilities and authority, key positions and qualifications, and regulatory interface and deliverables;
- The contractors selection process including procedures for prequalification of contractors, competitive bidding process, review and evaluation of bid proposals, and contract negotiation and award;
- Procedures for implementation of site controls and management including site preparation, site security, site communications, cost controls and tracking, schedule controls and tracking, and the administration and approval process for construction changes;

- Reporting requirements for daily documentation reports, monthly status reports, the Prefinal Inspection Report, and the Remedial Action Report; and
- Requirements for project meetings including the Pre-Construction Conference, daily coordination and status meetings, weekly progress meetings, monthly project management meetings, and quarterly project coordination meetings.

1.2.3 Construction Quality Assurance Plan

The Construction Quality Assurance (CQA) Plan was developed to provide a plan of implementation of quality control procedures and criteria to ensure, with a reasonable degree of certainty, that the Remedial Action construction work meets or exceeds the design criteria, plans, and specifications in accordance with the Medley Farm Site Consent Decree and SOW. This CQA Plan contains the following elements to reflect specific monitoring, testing, inspection, and documentation requirements:

- Quality Assurance definitions and references to standards;
- Description of the Independent Quality Assurance Team (IQAT) organization including the delineation of responsibilities and authority, and qualifications and experience of the designated members of the IQAT; and
- Construction Quality Assurance procedures for monitoring, inspection, and control testing requirements to a listing of definable, delineated control monitoring features of the RA Construction, and Construction Quality Assurance documentation reporting procedures.

1.3 Regulatory Requirements

1.3.1 RD/RA Consent Decree

Section VI., Paragraphs 12.a., b., and c. (Pages 17 and 18) of the Medley Farm Consent Decree (Appendix A) provides the specific requirements for the Remedial Action Work Plan. Paragraph 12.b. specifically indicates that the Remedial Action Work Plan will include, at a minimum, the following:

- (1) the schedule for the completion of the Remedial Action;
- (2) the method for selection of the contractors;
- (3) a schedule for developing and submitting other required Remedial Action Plans (i.e., the Remedial Action Sampling and Analysis Plan (RA SAP));
- (4) a ground water monitoring plan;

- (5) methods for satisfying permitting requirements;
- (6) a methodology for implementation of the Operations and Maintenance Plan;
- (7) a methodology for implementation of the Contingency Plan;
- (8) a Construction Quality Assurance Project Plan (CQAPP), which will detail the approach to quality assurance during construction activities at the Site, will specify an Independent Quality Assurance Team (IQAT) as described in the SOW, to conduct a quality program during the construction phase of the project;
- (9) a construction quality control plan (by each Contractor);
- (10) procedures and plans for decontamination of equipment and the disposal contaminated materials.

The Remedial Action Sampling and Analysis Plan and ground water monitoring plan (Items 3 and 4 above) are addressed in the Performance Standards Verification Field Sampling and Analysis Plan in accordance with the SOW, Task V, Paragraph A.1. and 2 have been submitted to US EPA under separate cover. Implementation of the Operations and Maintenance Plan (Item 6 above) is addressed in the Operation and Maintenance Plan as specified in the SOW, Task IV, Paragraph A. 1 - 8. Implementation of the Contingency Plan measures (Item 7 above) is addressed in the Construction Health and Safety Plan / Contingency Plan in accordance with SOW, Task III, Paragraph A.4. These related plans were approved by the US EPA on September 30, 1993, and will be utilized in conjunction with the RA Work Plan.

1.3.2 Scope of Work (SOW)

Task III.A. (Pages 19-24) of the Scope of Work (Appendix B), entitled Remedial Action Planning, requires that development, submittal, and US EPA review and approval of the following documents prior to initiation of the Remedial Action Construction:

- Remedial Action Work Plan,
- Construction Management Plan,
- Construction Quality Assurance Plan, and
- Construction Health and Safety / Contingency Plan (submitted under a separate cover).

This section of the SOW specifies the minimal requirements and critical elements of each of these Remedial Action planning documents. These documents, in conjunction with the Construction Health and Safety / Contingency Plan, has been prepared to address these requirements and critical elements.

1.3.3 SC DHEC Construction Permit

In accordance with SC DHEC requirements, RMT has submitted an Application for Permit to Construct a Wastewater Treatment or Collection System. The permit application, a copy of which is provided in Appendix C, is presented in the Medley Farm Final Design Report.

1.3.4 SC DHEC NPDES Permit

On May 13, 1993, SC DHEC issued draft NPDES Permit No. SC0046469 to the Medley Farm Site Steering Committee for review and comment. This permit has since been issued for public review and is presented in its entirety in Appendix D. This permit outlines the specific requirements and conditions under which treated ground water will be permitted for discharge to Jones Creek.

1.3.5 Storm Water Permit

On July 30, 1993, Mr. Harvey Daniels of SC DHEC issued a written response to RMT's January 20, 1993 request for waiver from storm water permitting requirements. In his letter addressed to Mr. Jeffrey Friend of RMT, SC DHEC approved the RMT waiver request and effectively removed all requirements for storm water permitting at the Medley Farm Site. This correspondence is provided in Appendix E.

1.3.6 Air Quality Emissions

RMT's previous evaluations of expected air emissions from the air stripper and soil vacuum extraction systems indicated that the Medley Farm project fell into a de minimis category and air permits should not be required. RMT addressed this issue by submitting the technical justification for an air permitting waiver to the SC DHEC Bureau of Air Quality Control (BAQC). RMT's request for a permitting waiver included VOC emissions estimates previously compiled by SEC during the RI/FS, modelled ambient air concentrations, specific equipment details for both the air stripper and SVE system, and other supporting technical documentation. This

information was transmitted to SC DHEC BAQC with a copy of the Medley Farm Preliminary Design Report document for back-up. RMT's waiver request was prepared in accordance with recent SC DHEC policy developed for SVE and air-stripping systems of this type. After review and consideration of RMT's technical submittal, SC DHEC BAQC (in a letter dated December 129, 1992) granted RMT's waiver request for this project (Appendix F). Therefore, air permitting will not be required for either the air stripper or SVE system.

Section 2

REMEDIAL ACTION WORK PLAN

2.1 Remedial Action Project Delivery Strategy

This section discusses the general procedures and overall strategy to safely, efficiently, and cost-effectively manage the implementation of the Remedial Action (RA) Construction.

2.1.1 Procurement Methods and Contracting Strategy

The intent of the Medley Farm Site Steering Committee (MFSSC) is to effectively implement the Remedial Action construction through the utilization of a RA Construction Management organization to accomplish the objectives as required by the Medley Farm Site Consent Decree, Scope of Work (SOW), Record of Decision (ROD), Remedial Design (RD) requirements. The RA Project Management Team will provide a strong and effective management structure and implementation approach to accomplish the following:

- establish strong Remedial Action leadership roles and responsibilities;
- conduct and manage the competitive contractor selection processes for each RA construction contract;
- manage and maintain the appropriate project controls and contract administration during all phases of the project;
- fully execute the project health and safety requirements throughout the course of the project; and
- provide the required coordination and liaison with the US EPA, SC DHEC, Medley Farm Site Steering Committee, construction contractors, subcontractors, equipment vendors, testing organizations, and the Independent Quality Assurance Team, for all phases of remedial action construction.

Refer to Section 3.1 of the Construction Management Plan for a thorough description of the key positions, responsibilities, authority, and qualifications of the Remedial Action Project Management Team.

2.1.2 Phasing Alternatives

The RA Construction project has been divided into three key operational phases and construction contracts to maximize the efficiency and cost effectiveness of each specialty construction contractor as follows:

- Phase 1 - Initial Sitework Construction Contract
- Phase 2 - Well Installation Construction Contract
- Phase 3 - Treatment Systems Installation Construction Contract

The utilization of qualified contractors for each of these specific phased construction contracts will enable each of the selected contractors to implement their work within their own specialties for the designated scope of work of each particular phase of RA construction. In conjunction with the appropriate application of interactive "third-party" Construction Management, the implementation of each phase of work will be more competently executed from quality, health and safety, cost, and scheduling perspectives than the traditional single prime construction contractor approach.

The RA construction contracts listed above will be awarded based upon a competitive bidding process for each separate contract. Section 3.2 of the Construction Management Plan fully delineates the competitive contractors selection process that will be utilized.

2.1.3 Contractor and Equipment Availability

RMT has conducted a thorough review of the RA Construction requirements and qualifications of several specialty contractors for each phase of work. We have determined that there is a more than adequate number of qualified, competent construction firms to effectively complete the RA Construction Phases of work as outlined in Subsection 2.1.2 above.

RMT has also reviewed equipment availability during the Remedial Design process and we have determined that there is no unique scarcity in any of the specified equipment or material components. Therefore, we do not anticipate that there will be schedule delays to the Remedial Action Construction Schedule nor extensive substitutions required due to qualified contractor or equipment shortages.

2.1.4 Community Relations

The MFSSC will cooperate with US EPA and SC DHEC community relations initiatives by providing requested technical information to develop periodic information circulars for

distribution to area residents and other interested parties. It is envisioned that direct contact with the public will remain under the purview of the US EPA and its designated agents.

2.2 Initial Sitework Construction Contract

The Sitework Construction Contract will be the initial RA construction contract awarded and implemented. The primary intent of this contract is to effectively complete major Site Preparation Operations to secure the Site and ensure that subsequent phases of RA construction are performed in a more safe and productive manner. Work conducted under this contract will be in accordance with the approved drawings, specifications, and other RA project requirements. The list of approved project specifications and drawings to be utilized for RA construction is presented in Appendices G and H, respectively. The project management team's role and responsibilities are described in Section 3 of this document.

The Remedial Action Construction Schedule shown in Section 5 of this plan delineates the primary operations and durations for this phase of work. These operations are also more thoroughly described below.

2.2.1 Contractor Preparation and Mobilization

The Sitework Construction Contractor will accomplish the following major tasks before the commencement of mobilization activities:

- Develop and submit a Detailed Critical Path Progress Schedule for elements of this contract in accordance with the approved Remedial Action Construction Schedule to the RA Construction Manager.
- Submit a final list of the Contractor's Project Organization Team and Responsibilities and Contractor's Site Operations Layout Plan to the RA Construction Manager.
- Procure and expedite all materials and equipment required under this specific RA construction contract.
- Complete all other required contract and regulatory submittals, and make all arrangements for mobilization and for temporary facilities and utilities, permits and licenses, notifications, safety and other equipment, decontamination and disposal arrangements, site security, site communications, etc. to comply with RA construction project requirements.

- Attend the Preconstruction Conference for this RA construction contract as delineated in Section 3.5.1 of the Construction Management Plan.

2.2.2 Site Preparation Operations

The Sitework Construction Contractor will accomplish the following major tasks for Site Preparation Operations:

- Complete mobilization and installation of temporary facilities and utilities, laydown areas, decontamination units, and health and safety services, and establish site security, site communications, and other site controls to comply with RA construction project requirements.
- Complete clearing and grubbing of designated areas and dispose of the debris in accordance with the approved RA plans and specifications.
- Complete the installation of required erosion controls.
- Complete the required grading operations for designated areas.
- Complete the grading and construction of required access roads.
- Complete the installation of required site drainage and storm water controls

2.2.3 Site Restoration, Completion, and Demobilization

The Sitework Construction Contractor will accomplish the following major tasks prior to completion and demobilization of Site Preparation Operations:

- Complete and/or rework or repair all incomplete or discrepant items required under this contract as determined by the RA Construction Manager and Independent Quality Assurance Team (IQAT) that are listed on the RA Construction Punchlist.
- Actively participate in the Prefinal and Final Inspection Process and complete and/or rework or repair all incomplete or discrepant items identified in these inspections as specified in Sections 2.5 and 2.6 of this RA Work Plan.
- Maintain and submit to the RA Construction Manager the record and "as-built" documents for the installations under this contract.
- Conduct demobilization of temporary facilities, equipment, and personnel from the Site as required by this contract and approved by the RA Construction Manager.

2.3 Well Installation Construction Contract

The Well Installation Construction Contract will be awarded during and implemented following the substantial completion of the Initial Sitework Construction Contract. The primary intent of this contract is to effectively complete the well drilling and installation operations for the ground water recovery wells, soil vapor extraction wells, vacuum monitoring wells, and the multi - level wells. Work conducted under this contract will be in accordance with the approved drawings, specifications, and other RA project requirements (RMT Technical Memorandum, dated 12/22/93 - Appendix I; and US EPA Letter, dated 1/31/94 - Appendix J). The list of approved project drawings and specifications to be utilized for RA construction is presented in Appendix G and H.

The Remedial Action Construction Schedule shown in Section 5 of this plan delineates the primary operations and durations for this phase of work. These operations are also more thoroughly described below.

2.3.1 Contractor Preparation and Mobilization

The Well Installation Contractor will accomplish the following major tasks before the commencement of mobilization activities:

- Develop and submit a Detailed Critical Path Progress Schedule for elements of this contract in accordance with the approved Remedial Action Construction Schedule to the RA Construction Manager.
- Submit a final list of the Contractor's Project Organization Team and Responsibilities and Contractor's Site Operations Layout Plan to the RA Construction Manager.
- Procure and expedite all materials and equipment required under this specific RA construction contract.
- Complete all other required contract and regulatory submittals, and make all arrangements for mobilization and for temporary facilities and utilities, permits and licenses, notifications, safety and other equipment, decontamination and disposal arrangements, site security, site communications, etc. to comply with RA construction project requirements.
- Attend the Preconstruction Conference for this RA construction contract as delineated in Section 3.5.1 of the Construction Management Plan.

2.3.2 Installation of Ground Water Recovery Wells

The Well Installation Contractor will complete the preparation, drilling, and installation of the ground water recovery wells for both Ground water Recovery Systems A and B in accordance with the approved drawings, specifications, and other RA project requirements. Figure 2-1 reflects a Construction Diagram for Ground Water Extraction Wells.

2.3.3 Installation of Soil Vapor Extraction Wells and Vacuum Monitoring Wells

The Well Installation Contractor will complete the preparation, drilling, and installation of the soil vapor extraction wells and vacuum monitoring wells located in Areas 1, 2, and 3 within the Estimated Zone of Influence in accordance with the approved drawings, specifications, and other RA project requirements. Figures 2-2 and 2-3 present the Construction Diagram for Soil Vapor Extraction Wells and the Construction Diagram for Vacuum Monitoring Wells.

2.3.4 Installation of Multi-Level Wells

The Well Installation Contractor will complete the preparation, drilling, and installation of the multi-level wells in accordance with the approved drawings, specifications, and other RA project requirements. A typical construction diagram for the multi-level wells is provided in Figure 2-4.

2.3.5 Site Restoration, Completion, and Demobilization

The Well installation Contractor will accomplish the following major tasks prior to completion and demobilization of well installation operations:

- Complete and/or rework or repair all incomplete or discrepant items required under this contract as determined by the RA Construction Manager and Independent Quality Assurance Team (IQAT) that are listed on the RA Construction Punchlist.
- Actively participate in the Prefinal and Final Inspection Process and complete and/or rework or repair all incomplete or discrepant items identified in these inspections as specified in Sections 2.5 and 2.6 of this RA Work Plan.
- Maintain and submit to the RA Construction Manager the record and "as-built" documents for the installations under this contract.
- Conduct demobilization of temporary facilities, equipment, and personnel from the Site as required by this contract and approved by the RA Construction Manager.

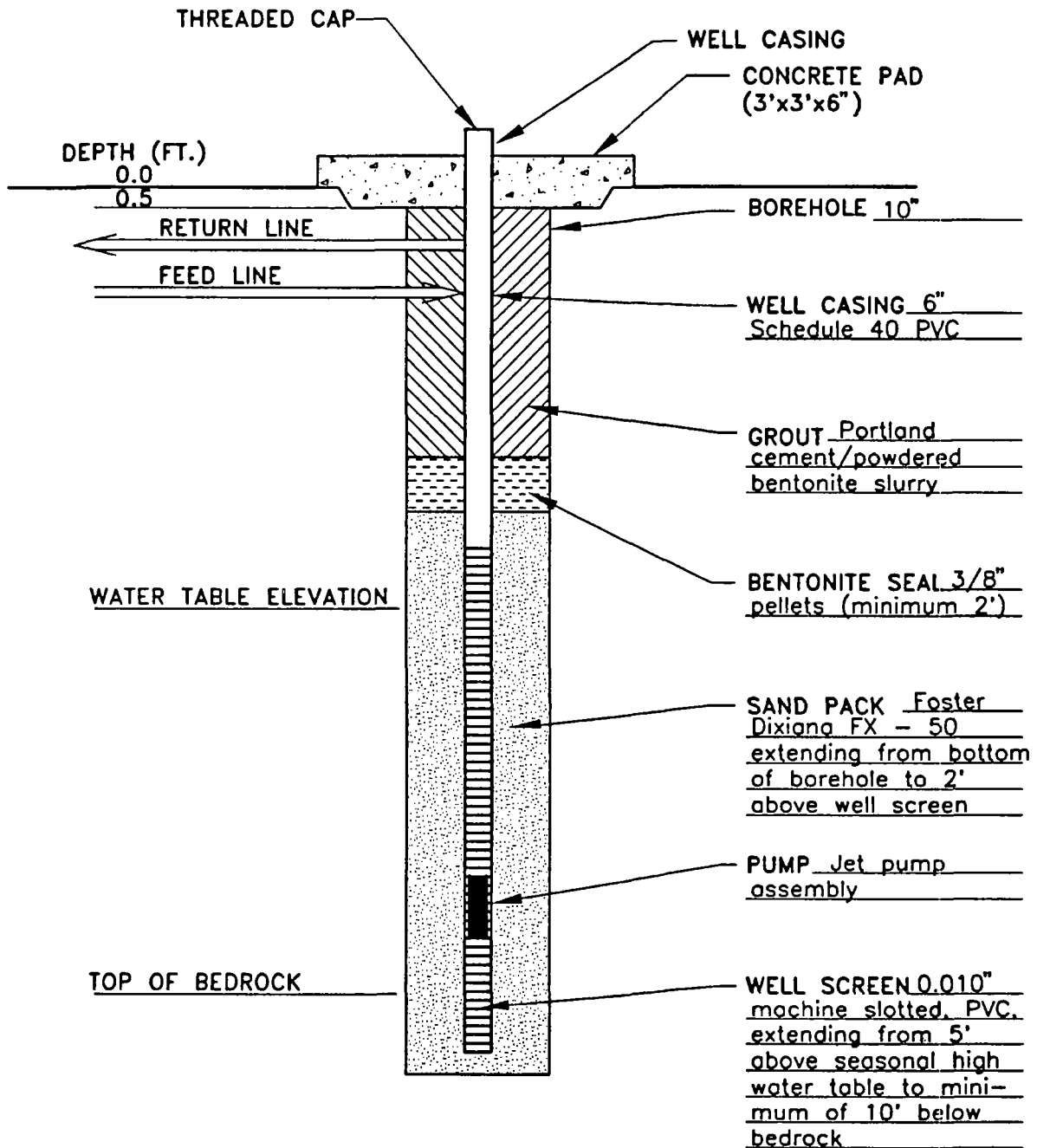


FIGURE 2-1

GROUND WATER EXTRACTION WELL CONSTRUCTION SCHEMATIC

Not To Scale

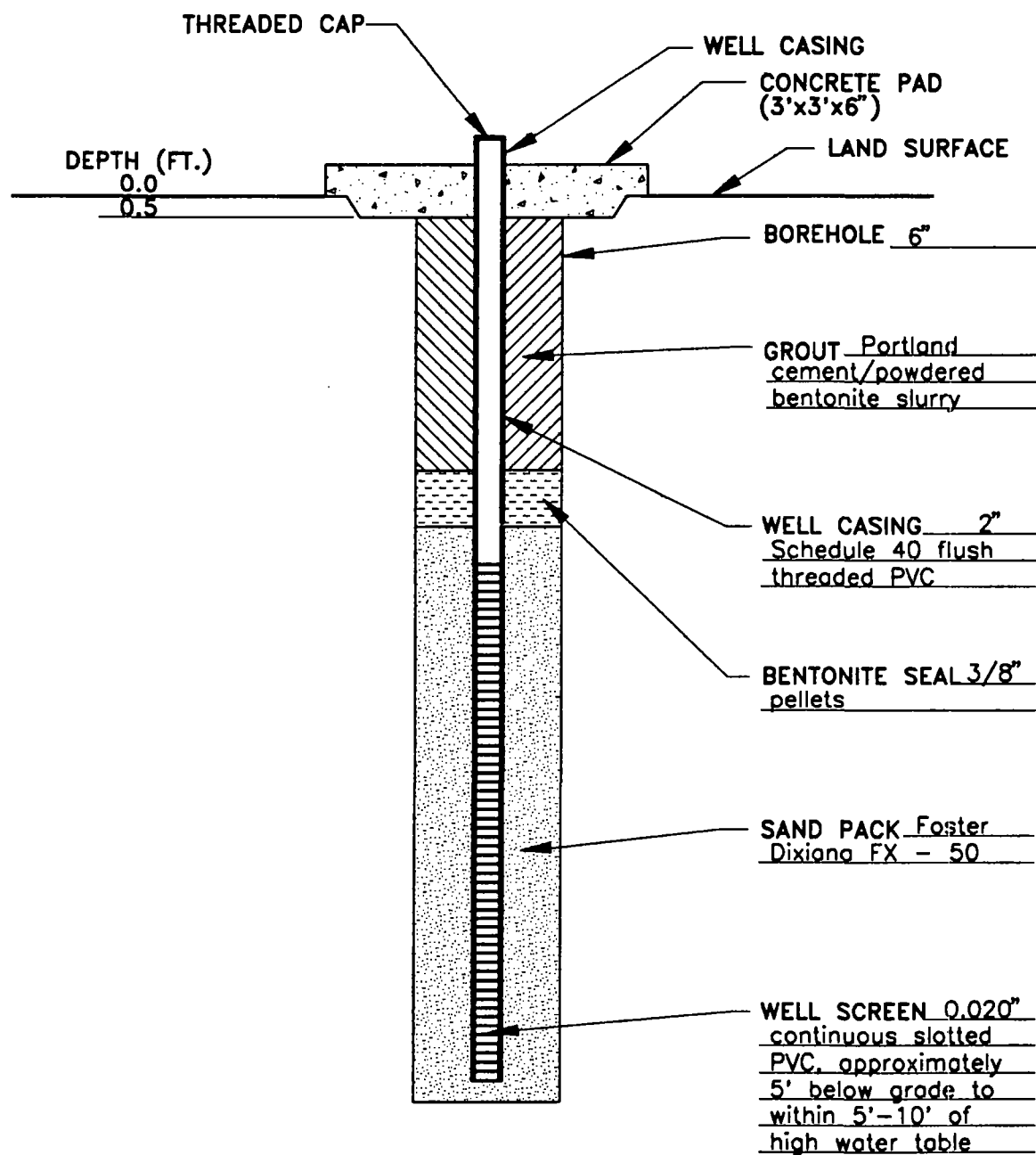


FIGURE 2-2
SOIL VAPOR EXTRACTION WELL SCHEMATIC
 Not To Scale

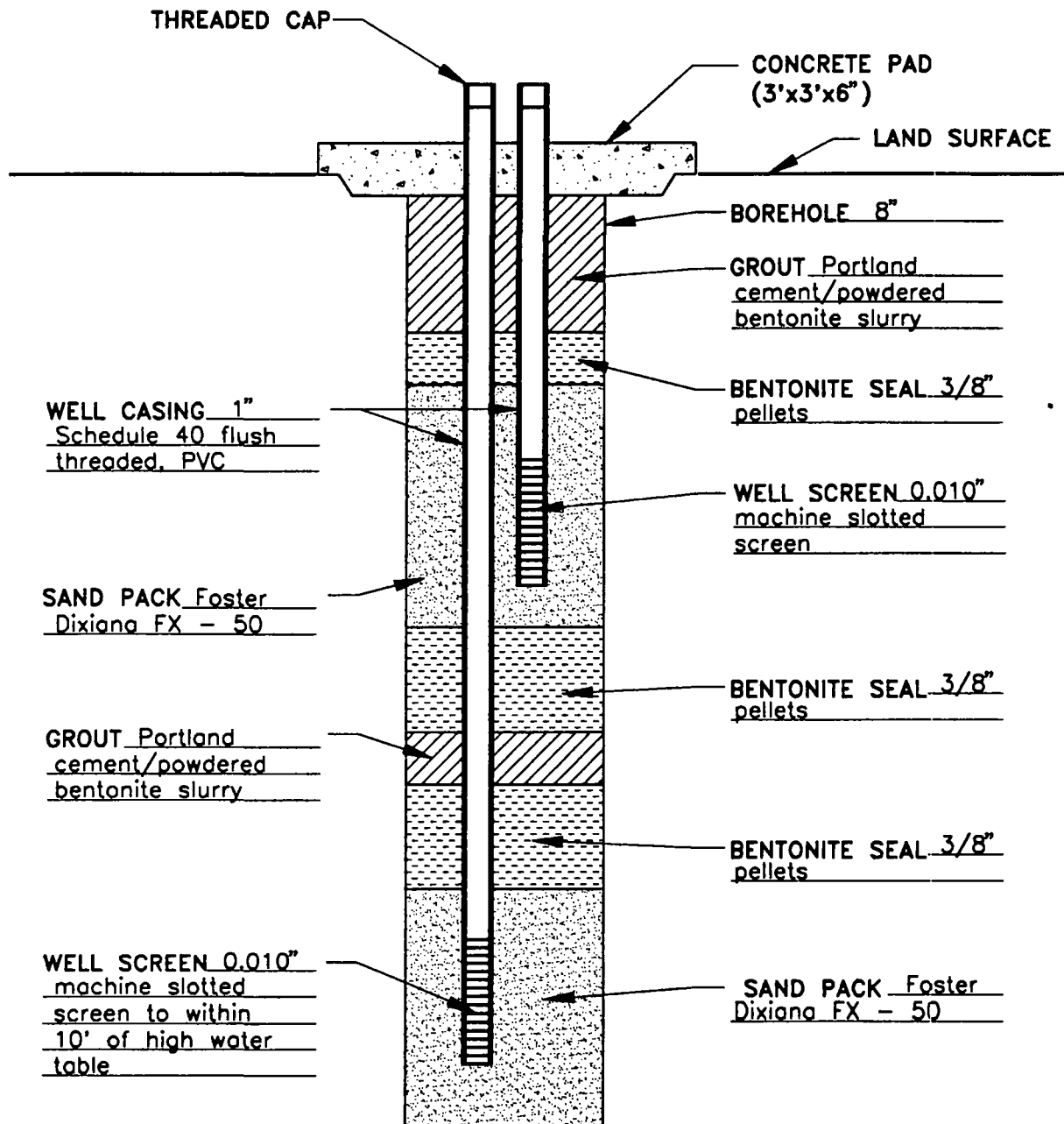
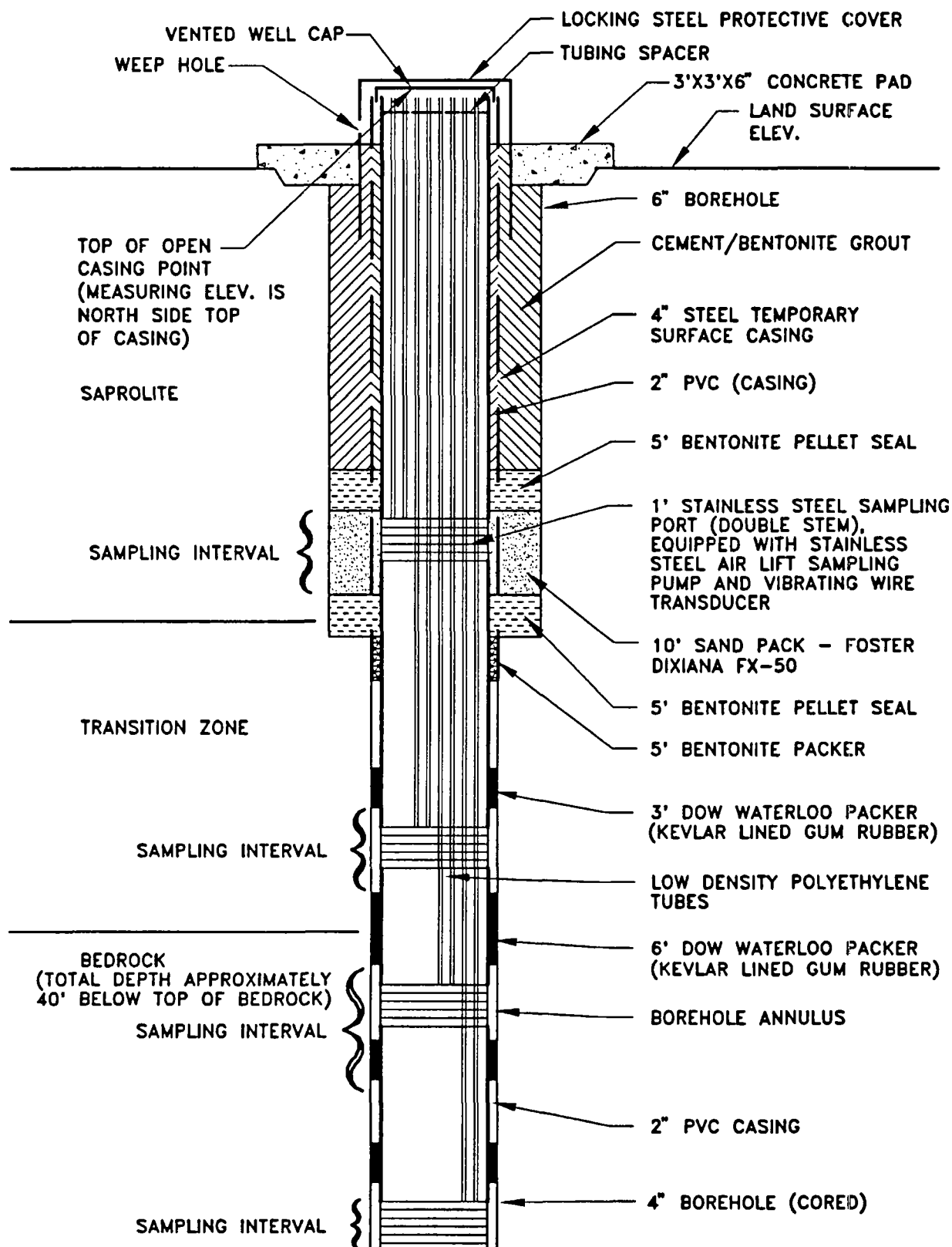


FIGURE 2-3
VACUUM MONITORING WELL SCHEMATIC
 Not To Scale



WATERLOO MULTI-LEVEL WELL SCHEMATIC

Not To Scale

FIGURE 2-4



2.4 Treatment Systems Installation Construction Contract

The Treatment Systems Installation Construction Contract will be awarded during and implemented during the work of the Initial Well Installation Construction Contract. The primary intent of this contract is to effectively complete the Ground Water Recovery and Soil Vapor Extraction Treatment Systems installation, testing, and system start-up operations. Work conducted under this contract will be in accordance with the approved drawings, specifications, and other RA project requirements. The list of approved drawings and specifications is presented in Appendix G and H.

The Remedial Action Construction Schedule shown in Section 5 of this plan delineates the primary operations and durations for this phase of work. These operations are also more thoroughly described below.

2.4.1 Contractor Preparation and Mobilization

The Treatment Systems Construction Contractor will accomplish the following major tasks before the commencement of mobilization activities:

- Develop and submit a Detailed Critical Path Progress Schedule for elements of this contract in accordance with the approved Remedial Action Construction Schedule to the RA Construction Manager.
- Submit a final list of the Contractor's Project Organization Team and Responsibilities and Contractor's Site Operations Layout Plan to the RA Construction Manager.
- Procure and expedite all materials and equipment required under this specific RA construction contract and submit all vendor instruction and operation and maintenance manuals for equipment and components to be furnished and installed to the RA Construction Manager.
- Complete all other required contract and regulatory submittals, and make all arrangements for mobilization and for temporary facilities and utilities, permits and licenses, notifications, safety and other equipment, decontamination and disposal arrangements, site security, site communications, etc. to comply with RA construction project requirements.
- Attend the Preconstruction Conference for this RA construction contract as delineated in Section 3.5.1 of the Construction Management Plan.

2.4.2 Site Preparation Operations

The Treatment Systems Construction Contractor will complete mobilization and the installation of temporary facilities and utilities, laydown areas, provide health and safety services, and establish site security, site communications, and other site controls to comply with RA

construction project requirements prior to commencement of the construction of the treatment systems.

2.4.3 Installation of Ground Water Recovery and Treatment Systems

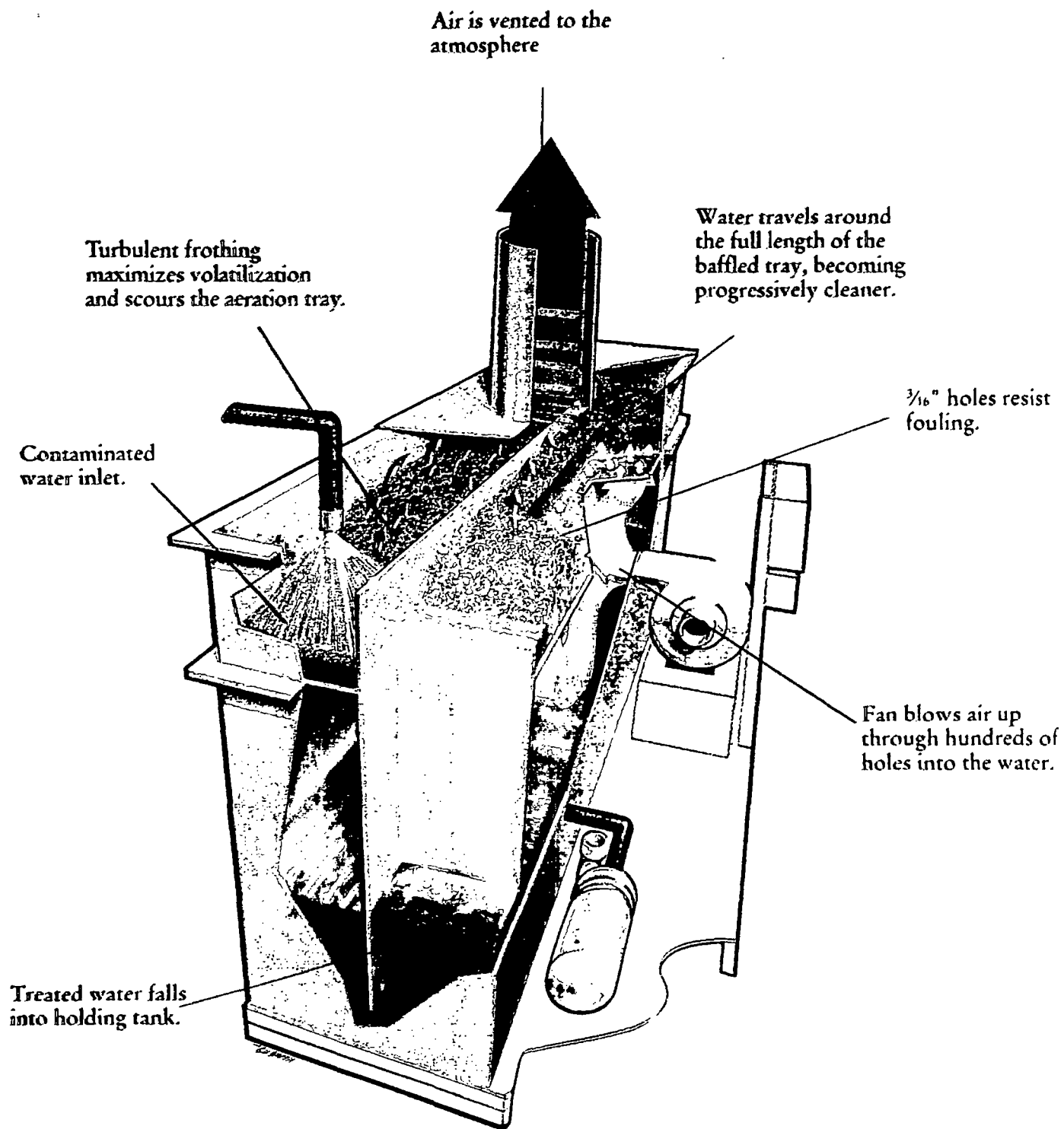
The Treatment Systems Construction Contractor will provide and install the following required elements, equipment, and components for Ground Water Recovery and Treatment Systems A and B:

- equipment, pump, and tank foundations;
- pipe trenching and excavation and backfill and compaction operations;
- feed, return, and discharge piping lines and associated manholes, meter/valve boxes, air-vacuum release valves, valves, fittings, and supports;
- the diffuser into the Jones Creek Outfall;
- required electrical, instrumentation, and controls components and supports;
- Air Stripper AS-1 as reflected in Figure 2-5;
- Recirculation Tank T-1;
- Blower B-400 and blower duct;
- Pumps P-100 and P-200;
- jet pump assemblies;
- insulation and electrical heat-tracing of above-ground piping;
- steel roof structure over the tank, pump, and air stripper foundation and chain link security fencing around this foundation area; and
- other required equipment and components under this contract.

2.4.4 Installation of Soil Vapor Recovery System

The Treatment Systems Construction Contractor will provide and install the following required elements, equipment, and components for the Soil Vapor Extraction (SVE) Recovery System:

- approved vendor supplied SVE package treatment system ;
- graded, crushed-stone pad for SVE treatment system;



PHOTOGRAPH TAKEN FROM SHALLOW TRAY AERATION SYSTEM (NORTH EAST ENVIRONMENTAL PRODUCTS, INC.)

FIGURE 2-5

LOW-PROFILE AIR STRIPPER



938.18
0493

MEDLEY FARMS SITE
GAFFNEY, SC

- SVE pipe trenching and excavation and backfill operations;
- SVE piping lines and associated, valves, fittings and supports;
- required electrical, instrumentation, and controls components and supports; and
- other required equipment and components under this contract.

Upon preliminary completion of the construction of the treatment systems, the Treatment Systems Construction Contractor will conduct the following:

- Complete and/or rework or repair all incomplete or discrepant items required under this contract as determined by the RA Construction Manager and Independent Quality Assurance Team (IQAT) that are listed on the RA Construction Punchlist.
- Actively participate in the Prefinal and Final Inspection Process and complete and/or rework or repair all incomplete or discrepant items identified in these inspections as specified in Sections 2.5 and 2.6 of this RA Work Plan.
- Maintain and submit to the RA Construction Manager the record and "as-built" documents for the installations under this contract.

The Treatment Systems Construction Contractor will implement final site restoration prior to the Prefinal Inspection and demobilize temporary facilities, equipment, and personnel from the Site as required by this contract and approved by the RA Construction Manager after successful completion of the Final Inspection.

2.4.5 Operational Testing of Equipment and System Components

The Treatment Systems Construction Contractor and their subcontract vendors will be responsible to provide complete systems testing, systems demonstration, and systems start-up services for the elements, equipment, and components for the Soil Vapor Extraction (SVE) Treatment System and the Ground Water Recovery System prior to the Prefinal Inspection. The designated Certified Waste Water Treatment Operator will review and coordinate with the Treatment System Contractor during these systems testing, systems demonstration, and systems start-up activities to get familiarized with the operations and maintenance of the treatment systems and each equipment component of the systems and get acquainted with the subcontract vendors for each system component.

2.5 Prefinal Inspection

Upon substantial completion of the RA Treatment Systems Installation Contract, the RA Coordinator, on behalf of the MFSSC, will provide written notice to the US EPA and SC DHEC for the purpose of conducting a Prefinal Inspection. This inspection will be conducted in accordance with the SOW (Task III C.). Participants in the Prefinal Inspection may include the following as required:

- members of the MFSSC,
- US EPA and SC DHEC,
- RA Coordinator,
- RA Construction Manager,
- Resident Construction Quality Assurance (CQA) Engineer,
- Independent Quality Assurance Team (IQAT),
- RA Project Engineer,
- the designated Certified Waste Water Treatment Operator (O & M),
- Sitework Construction Contractor,
- Well Installation Construction Contractor, and
- Treatment Systems Contractor and appropriate subcontract vendors.

This inspection will consist of a walk through inspection of the entire Medley Farm Site. The objective of the Prefinal Inspection is to determine whether the RA construction is complete and is consistent with the requirements of the Consent Decree, SOW, and other RA project requirements. Any construction items determined to be incomplete or discrepant will be identified and added to the Construction Punchlist by the Resident CQA Engineer.

Additionally, the treatment systems equipment will be operationally tested and demonstrated by the Treatment Systems Contractor and appropriate subcontract vendors as an important element of this inspection. Equipment operational testing and demonstration will be repeated where any deficiencies or malfunctions are determined.

The RA Coordinator will submit a Prefinal Inspection Report to the US EPA with the attached Construction Punchlist generated by the CQA Coordinator. Requirements for the Prefinal Inspection Report are outlined in Section 3.4.3 of the Construction Management Plan.

2.6 Final Inspection

Upon completion of the incomplete or discrepant construction items discovered during the Prefinal Inspection, the RA Coordinator, on behalf of the MFSSC, will provide written notice to the US EPA and SC DHEC for the purpose of conducting a Final Inspection. This inspection will be conducted in accordance with the SOW (Task III D.). Participants in the Final Inspection may include the same participating parties that conducted the Prefinal Inspection.

This inspection will also consist of a walk through inspection of the entire Medley Farm Site. The objective of the Final Inspection is to determine whether the incomplete or discrepant construction items discovered during the Prefinal Inspection are completed and equipment and components that were tested unsatisfactory in the Prefinal Inspection will be operationally tested again. Any outstanding constructions items discovered during this inspection will be added to the punchlist again by the Resident CQA Engineer and this inspection will be deemed another Prefinal Inspection requiring the submittal of another Prefinal Inspection Report to the US EPA by the RA Coordinator with the subsequent implementation of another Final Inspection.

2.7 Post Remedial Action Construction Activities

The following Post RA Construction activities will take place during RA Construction and after successful completion of the Final Inspection:

2.7.1 Remedial Action Report

The Remedial Action Report will be prepared during the RA Construction and will be finalized and submitted to the US EPA within thirty (30) days following completion of the final inspection by the RA Coordinator. The report will be prepared and submitted in accordance with the SOW (Task III. E.) as delineated in Section 3.4.4 of the Construction Management Plan.

2.7.2 Commencement of Operations and Maintenance

Operations and Maintenance (O & M) activities for the Ground Water Recovery and Soil Vapor Extraction Treatment Systems will commence following the successful completion of the Final Inspection and systems turnover by the Treatment Systems Contractor to the designated Certified Waste Water Treatment Operator. The systems O & M activities will be initiated and conducted in compliance with the approved Final Operation and Maintenance Plan which will be submitted by the RA Coordinator to the US EPA at the fifty percent (50%) completion of the RA Construction.

2.7.3 Record and As-Built Documents

Record and "As-Built" revised drawings and other documents will be submitted to the US EPA with the Remedial Action Report by the RA Coordinator. These documents will be prepared and submitted in accordance with the SOW (Task III. E.) as delineated in Section 3.4.4 of the Construction Management Plan.

Section 3

CONSTRUCTION MANAGEMENT PLAN

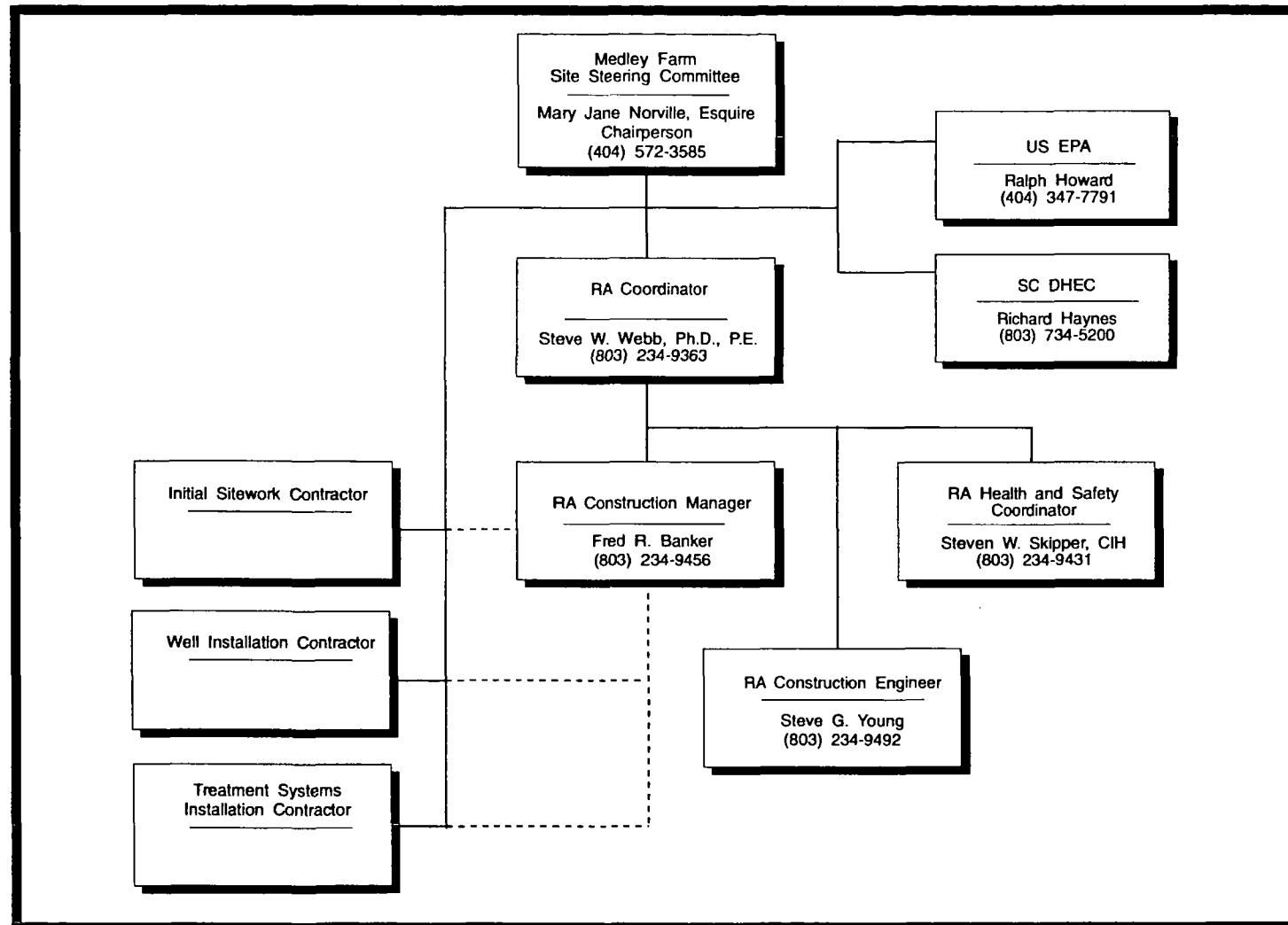
3.1 Remedial Action Project Management Team

The objective of this subsection is to describe the roles and responsibilities of key members of the Remedial Action Project Management Team. The organization chart shown in Figure 3-1 indicates the functional relationship of the key personnel on the Remedial Action Project Management Team.

3.1.1 Key Positions, Responsibilities, and Authority

Descriptions of key positions of the Remedial Action Project Management Team are shown below for the following key members:

- **Medley Farm Site Steering Committee (MFSSC)**
 - Overall responsibility for Remedial Action Construction activities on the Medley Farm Site;
 - Primary management contact with US EPA and SC DHEC regulatory officials.
- **Remedial Action (RA) Coordinator / Project Manager**
 - Primary contact with the Medley Farm Site Steering Committee;
 - RA Project Management Team contact with US EPA and SC DHEC regulatory officials;
 - Responsible for planning, managing, and coordinating the Remedial Action Construction activities conducted by the Remedial Action Project Management Team;
 - Preparation and submittal of Monthly and Quarterly status Reports, the Remedial Action Report, and other deliverables and notifications to the US EPA and SC DHEC as required by the Consent Decree and the SOW and as further delineated in this Construction Management Plan in conjunction with the Remedial Action Work Plan; and
 - Other responsibilities and authority as delegated by the MFSSC during the Remedial Action or as reflected in this Construction Management Plan and in conjunction with the RA Work Plan.



- **RA Construction Manager**

- Assist RA Coordinator / Project Manager in planning, managing, and coordinating all Remedial Action Construction activities conducted by the Remedial Action Project Management Team;
- Responsible for implementation and management of the complete contractor selection process for the Initial Sitework, Well Installation, and Treatment Systems Installation contracts including contractor pre-qualification, Bidding / Contract Document development, bid receipt, tabulation, and evaluation, and assistance with contract negotiation, award, and administration;
- Site Health and Safety Representative (HSR) during RA construction in accordance with the Construction Health and Safety/Contingency Plan;
- On-Site management contact with US EPA and SC DHEC regulatory officials;
- Provide critical resident oversight, management, and contract administration of the RA Construction operations during the RA Construction Phase;
- Oversee the implementation cost controls, schedule controls, and other site controls on a daily basis and serve as liaison between contractors, regulatory officials, the RA Coordinator, and the Medley Farm Site Steering Committee;
- Prepare Daily Construction Documentation reports, maintain records and files on-site, and assist in preparation of Monthly Status Reports submitted to the US EPA; and
- Other responsibilities and authority as delegated by the MFSSC and/or the RA Coordinator during the Remedial Action or as reflected in this Construction Management Plan and in conjunction with the RA Work Plan.

- **RA Health and Safety Coordinator (HSC)**

- Oversight of the Health and Safety / Contingency Plan development.
- Monitoring the contractor's and Project Management Team's implementation and compliance with the Construction Health and Safety / Contingency Plan.
- Additional Health and Safety responsibilities and duties in compliance with the Construction Health and Safety/Contingency Plan.

- **RA Project Engineer**
 - Assist RA Construction Manager during the Bidding Phase and RA Construction Phase to provide interpretations and clarifications of the Remedial Design documents including attendance at the Pre-Bid Conferences.
 - Serve as liaison between the RA Construction Manager and the contractors and the electrical, structural, mechanical, and structural discipline design engineers for resolution of interferences and problems and for design clarifications and interpretations during the RA Construction.
 - Conduct periodic Site visits with the Resident CQA Engineer to review the RA Construction in-process for compliance with the plans and specifications and review potential design problems or interferences.

3.1.2 Qualifications

Personnel involved in Remedial Action Construction project activities at the Medley Farm Site must possess the education, experience, and qualifications necessary to safely and efficiently conduct their designated responsible work activities. All personnel participating in on-site Remedial Action construction activities will be trained for hazardous waste activities in accordance 29 CFR Part 1910.120 promulgated by the Occupational Safety and Health Administration (OSHA).

3.1.3 Regulatory Interface and Deliverables

Remedial Action construction activities as described in this plan will not proceed until written approval of the Remedial Action Work Plan, Construction Management Plan, Construction Quality Assurance Plan, and Final Remedial Design have been granted by the US EPA in compliance with the Medley Farm Site Consent Decree (Appendix A) and SOW (Appendix B). The Health and Safety / Contingency Plan will be submitted to the US EPA for review only and not for approval.

During RA Construction, the following documents will be submitted by the RA Coordinator to the US EPA with distribution copies to SC DHEC:

- Monthly Status Reports of Remedial Action Activities.

- Construction Quality Assurance Documentation Reports and inspection check-lists as generated and provided by the Independent Quality Assurance Team as specified in the Construction QA Plan.
- The Final Operation and Maintenance Plan will be prepared, updated, and submitted by the RA Coordinator to the US EPA at fifty percent (50%) completion of the RA Construction.
- Written notifications to the US EPA of significant changes, substitutions, and/or modifications to the approved project drawings and specifications, RA Work Plan, Construction Management Plan, Construction Quality Assurance Plan, Health and Safety / Contingency Plan, or other plans as specified in Section 3.3.7 of this Construction Management Plan.
- Notice to US EPA for Prefinal Inspection upon preliminary project completion.
- Prefinal Inspection Report and attached punchlist for US EPA review and comment.
- Notice to US EPA for Final Inspection upon completion of outstanding RA construction items.
- Additional Prefinal Inspection Report and attached punchlist for US EPA review and comment if additional incomplete items are determined during final inspection.
- Remedial Action Report for US EPA review and approval.

3.2 Contractors Selection Process

The contractor selection process for awarding construction contracts for Initial Sitework, Well Installation, and Treatment System Installations managed under this Remedial Action will be conducted within the framework of the following general procedures delineated in the subsections below.

3.2.1 Pre-Qualification of Contractors

A thorough contractor pre-qualification process will be conducted by the RA Construction Manager, or a designee, to determine the qualifications of potential bidding contractors for the Initial Sitework, Well Installation, and Treatment System Installation contracts. Potential bidding contractors will be pre-qualified for the bidding process based on the following criteria as a minimum:

- Availability and quality of labor, equipment, subcontractors, and suppliers;

- Health and Safety program qualifications (29 CFR 1910.120, etc.) and other applicable health and safety criteria;
- previous successful experiences with similar projects;
- recommendations from other clients and industry reputation;
- financial status and liability insurance and bonding capabilities; and
- adequate permits and licenses from local, state, and federal agencies.

Five to eight pre-qualified bidders will be selected for the competitive bidding of each contract based upon the criteria listed above. The Medley Farm Site Steering Committee will subsequently review the qualifications of each proposed pre-qualified bidder and provide approval of their qualifications if warranted or request that a substitute pre-qualified bidder be selected to bid the contract.

3.2.2 Competitive Bidding

The RA Construction Manager, or his designee, will thoroughly evaluate alternative contract methods, pricing structure, schedule requirements and task phasing, health and safety considerations and methods to facilitate a cost effective and efficient award of the RA work. Upon completion of this evaluation process and concurrence of the Medley Farm Site Steering Committee, the RA Construction Manager, or his designee will prepare a Project Manual which will serve as both Bidding and Contract Documents for each contract of the RA construction work.

The Project Manual will incorporate standard construction contract terms and conditions and the following critical standard Bidding and Contract Document requirements and elements as a minimum for each contract of RA construction work:

- Invitation to Bid and Bidding Schedule;
- Instruction to Bidders;
- Bid Forms incorporating lump sum, unit price, and time and materials pricing structures as required for different elements of RA construction work;
- Standard Agreement forms;

- General and Supplementary Conditions;
- Bid Bond, Performance and Payment Bond and other contract administration forms;
- liability and property insurance requirements;
- General Requirement specifications;
- RA drawings and technical specifications;
- the Medley Farm Site Consent Decree and SOW as contract exhibits;
- this RA Work Plan, Construction Management Plan, and Construction Quality Assurance Plan;
- the Construction Health and Safety / Contingency Plan; and
- other required exhibits and requirements for safe and effective implementation of the RA construction.

The RA Construction Manager, or a designee, will submit the Project Manual for each contract to the Medley Farm Site Steering Committee for review and approval prior to issuance for competitive bidding. Upon approval the Project Manual will be issued for bid to each approved, qualified bidder.

The RA Construction Manager will be responsible to manage the competitive bidding process for each contract, issue and record distribution of Bidding Documents, receive and manage the required deposits, and other bidding submittals and requirements. He/She will receive inquiries from bidding contractors regarding the Bidding Documents, coordinate responses, provide clarifications and interpretations to Bidders, and prepare and provide addenda to the bidding documents if necessary.

The duration of the competitive bidding process for each contract will vary, but a minimum time-frame of three weeks will be provided to the bidders to allow adequate time for review of the bidding documents and to develop an understanding of the scope of work for each contract and an understanding of the RA construction project requirements.

3.2.3 Pre-Bid Conference

A Pre-Bid Conference will be held during each competitive bidding process. This conference will be managed and administered by the RA Construction Manager, and attended by appropriate members of RA Project Management Team, the bidders, the RA Project Engineer, the Medley Farm Steering Committee, others deemed appropriate for this meeting. The Pre-Bid Conference will allow the bidders the opportunity to accomplish the following:

- to openly review and examine the Bidding and Contract Documents more thoroughly and ask appropriate questions;
- visit the RA Site to become familiar with local conditions that may affect cost, progress, performance, or furnishing of the RA construction work;
- consider federal, state and local laws and regulations that may affect cost, progress, performance or furnishing of the RA construction work;
- study and carefully correlate the bidders observations with the requirements of the Bidding and Contract Documents;
- ask technical and scope related questions and notify the Design Engineer of all conflicts, errors or discrepancies in the Bidding / Contract Documents.

3.2.4 Review and Evaluation of Bid Proposals

To avoid any questions of impropriety, a committee comprised of the RA Coordinator, the RA Construction Manager, and a designated member of the Medley Farm Site Steering Committee will receive and open the bid proposals. Each member will complete a cursory review of each bid and retain a copy of each bid for further review. The RA Construction Manager will subsequently tabulate and fully evaluate the bid proposals for each contract. He/She will evaluate the bid proposals based upon the following criteria and considerations as a minimum:

- Bidder's compliance with the Bidding Documents and conveyed understanding of the RA construction project scope of work and requirements;
- Bidder's proposal competitive pricing;
- Bidder's proposed detailed RA Critical Path Construction Schedule;
- Bidder's proposed subcontractors and suppliers;
- technical quality of Bidder's proposal;

- Bidder's technical approach and alternatives proposed;
- Bidder's proposal competitive pricing; and
- other criteria as determined by the RA Construction Manager and Medley Farm Site Steering Committee.

The RA Construction Manager may conduct any such additional investigations as he/she deems necessary to assist in the evaluation of any Bid and to further establish the responsibility, qualifications and financial ability of Bidders, proposed subcontractors, suppliers and other persons and organizations to perform and furnish the RA construction work. Based upon this extensive review and evaluation, the RA Construction Manager will submit the Bid tabulations, evaluations, and recommendations to the Medley Farm Site Steering Committee for their review and consideration prior to contract negotiation and award.

3.2.5 Contract Negotiation and Award

Upon review and full consideration of the Bid tabulations, evaluations, and recommendations, the Medley Farm Site Steering Committee will notify the RA Construction Manager to commence contractual and/or pricing negotiations with two or more of the most qualified and responsive "Short-Listed" Bidders. Short-list Bidders presentations may be held to determine final contractor selection and contract award if deemed necessary by the RA Construction Manager and Medley Farm Site Steering Committee. Each contract will be awarded to the lowest Bidder whose review and evaluation by the RA Construction Manager and Medley Farm Site Steering Committee indicates that the award will be in the best interests of the project.

3.3 Construction Management and Site Controls

The RA Construction Manager will be responsible for management of the Site, the Initial Sitework, Well Installation, and Treatment Systems Installation contractors and the implementation of site controls as delineated below.

3.3.1 Site Preparation

The Initial Sitework Installation Contractor will be responsible to conduct the great majority of Site Preparation work for RA construction in accordance with the approved project drawings and specifications, the RA Work Plan, this Construction Management Plan, the CQA Plan, the

Health and Safety / Contingency Plan, their contract requirements, and other RA project requirements. The Well Installation and Treatment System Installation contractors will provide the remaining Site Preparation and Restoration work elements in accordance with the requirements listed above.

3.3.2 Site Security Program

Each RA Contractor will provide and implement a security program and facilities to protect the RA construction work, each contractor's and subcontractors equipment, tools, and facilities, existing facilities, and the Medley Farm Site from unauthorized entry, vandalism and theft. Each RA Contractor will coordinate their security program with the RA Construction Manager and the security program of other contractors working at the Medley Farm Site.

3.3.3 Site Communications

Each RA Contractor will provide and implement both an external and internal Site Communications program during their duration of RA Construction Work at the Medley Farm Site. External Site Communications, at a minimum, will consist of a continuously operable stationary telephone or mobile cellular telephone for each contractor and subcontractor working at the Site. Internal Site Communications, at a minimum, will consist of continuously operable and charged portable radios on one designated frequency and station for each contractor and subcontractor. One operable, charged, portable radio on this frequency and station will be provided daily to the RA Construction Manager during the duration of RA construction work at the Medley Farm Site to maintain efficient internal communications and emergency response capabilities.

3.3.4 Equipment Decontamination and Contaminated Material Disposal

The Initial Sitework Contractor will construct a functional equipment/vehicle decontamination containment pad for all RA construction activities. Each RA contractor will be responsible for utilizing and maintaining this decontamination unit throughout the duration of RA construction as follows:

- cleaning the affected soils from all vehicles and equipment utilized under their contract prior to leaving the Site;
- providing water service, high-pressure sprayer units, pumps, and appropriate rinsate containers to efficiently operate the decontamination unit;

- maintaining the decontamination unit clean after each usage; and
- containing all decontamination rinsate for appropriate waste management.

The Treatment Systems Installation contractor will be responsible for removal, transport, and appropriate disposal of the affected decontamination unit materials (in accordance with the Consent Order Section VI, Paragraph 15 a. and b.) prior to final demobilization in accordance with regulatory and project requirements.

3.3.5 Cost and Schedule Controls and Tracking

As outlined in Section 3.4.1, each RA construction contractor working at the Site will prepare and submit a Daily Cost and Schedule Report to the RA Construction Manager within one working day after the completion of that subject working day. A copy of this report is included in Appendix K.

The RA Construction Manager will receive and review each section of each report for consistency with the construction work accomplished and compliance with contract and other project requirements. If he/she determines that the report is inconsistent, incorrect, or otherwise unsatisfactory in any manner, the subject report will be returned to the contractor for correction. Satisfactory Daily Cost and Schedule Reports will be transmitted to the MFSSC and to the RA Coordinator for further review and record storage. A copy of each report will also remain at the Medley Farm Site in the RA Construction Manager's files.

Copies of these reports will be attached to each applicable Progress Payment or Final Payment Request (invoices) for references. The RA Construction Manager will receive and review each contractor's invoice for consistency with the construction work accomplished and compliance with contract and other project requirements. If he/she determines that the invoice is inconsistent, incorrect, or otherwise unsatisfactory in any manner, the subject invoice will be returned to the contractor for correction. Satisfactory reviewed invoices will be transmitted to the MFSSC for approval and payment and one copy will be forwarded to the RA Coordinator for further review and safe record storage. A copy of each invoice will also remain at the Site in the RA Construction Manager's files.

The RA Construction Manager will monitor and maintain a daily status of the Remedial Action Construction Schedule for each of the RA contractors based on the Daily Cost and Schedule Reports. Schedule status for each RA contractor for each ongoing RA construction activity will be discussed at each Weekly Progress Meeting. Each RA contractor will be responsible to perform and complete their scheduled construction activities and submittals on or before their committed completion dates in accordance with the RA Construction Schedule and/or provide the additional actions or resources to attain these schedule commitments.

3.3.6 Administration and Approval of Construction Changes

During the course of selecting RA contractors and performing the RA construction work, the RA Work Plan, Construction Management Plan, CQA Plan, Health and Safety / Contingency Plan, and drawings and specifications may have to be updated and modified to incorporate new information or a change in conditions at the Medley Farm Site.

The RA contractors will submit requested proposed field changes to these project documents verbally and in writing by letter to the RA Construction Manager. The RA Construction Manager will review the proposed changes and if he/she determines that change is warranted, the proposed change will be signed and forwarded to the RA Project Engineer for coordination and approval or disapproval. The verbal approval and letter for approval of each change request will be promptly provided to the contractor. This engineering approval process is not expected to take more than five working days and will be expedited as necessary in support of the RA Construction Schedule.

The US EPA will be notified in writing of substantial changes or modifications to these project documents by the RA Coordinator and the US EPA will be given the opportunity to review and approve these changes or modifications. Approved changes, substitutions, and modifications to these project documents will be incorporated in the record and as-built drawings and documents that are submitted to the US EPA with the Remedial Action Report.

3.4 Remedial Action Construction Reporting

The following documentation reports will be generated during the RA construction phases:

3.4.1 Daily Documentation Reports

Each RA construction contractor working at the Site will prepare and submit a Daily Cost and Schedule Report for each working day to the RA Construction Manager within one working day after the completion of that subject working day. A copy of this report is included in Appendix K. Refer to Sections 3.3.5 for procedures regarding Cost and Schedule Tracking and Controls.

3.4.2 Monthly Status Reports

The RA Coordinator will submit a Monthly Report to the US EPA by the 10th day of the subject month in accordance with the requirements of Section XI, Paragraph 30 of the Consent Decree. This report will describe the tasks initiated or completed as part of the RA for the Medley Farm Site during the reporting period and include the following elements:

- Project tasks and deliverables initiated or completed during the month;
- Scoping and initial data collection activities;
- Remedial Action Activities;
- Operation and Maintenance activities;
- Performance monitoring activities; and
- Project Tasks and deliverables planned for the current month.

3.4.3 Prefinal Inspection Report

The RA Coordinator will submit a Prefinal Inspection Report to the US EPA following the completion of the Prefinal Inspection as conducted in accordance with the SOW (Task III C.) and as per the procedures as delineated in Section 2.5 of the RA Work Plan. This report and attached RA Construction Punchlist will outline the following:

- outstanding or discrepant RA construction items and incomplete equipment testing and demonstration deficiencies;
- actions required for the resolution of outstanding or discrepant RA construction items and incomplete equipment testing and demonstration deficiencies;
- scheduled completion dates for each of the items identified above; and
- the scheduled date for Final Inspection.

3.4.4 Remedial Action Report

The RA Coordinator will develop and submit to the US EPA a Remedial Action Report within thirty (30) days after the Final Inspection to certify that all requirements of the RA construction project documents have been completed and that the Remedial Action is functional and operational. The Remedial Action Report will certify that required items contained in the Consent Order, SOW, Plans and Specifications, RA Work Plan, Construction Management Plan, CQA Plan, and other required documents have been completed satisfactorily and that the Remedial Action equipment and components are functional and operational as required. This report will be certified by the RA Project Engineer as a professional engineer registered in the State of South Carolina.

The Remedial Action Report will include the following items:

- A summary of the Remedial Action Construction and performance.
- Photographic documentation of the Remedial Action Construction.
- Description of outstanding or discrepant items determined at the Prefinal Inspection and how these items were completed or resolved.
- Explanation of modifications that were made during the Remedial Action to the original remedial design and plans and an explanation of why these changes were made.
- As-built and record drawings and other required data.
- Documentation of implementation of the Final Operations and Maintenance Plan and the Performance Standards Verification Plan.

3.5 Project Meetings

The following project meetings will be scheduled during the RA Construction. Written notification will be provided to the US EPA, SC DHEC, and other participants prior to these meetings by the RA Coordinator as required.

3.5.1 Pre-Construction Conferences

Prior to the initiation of construction work at Site for each contract, the RA Coordinator will schedule, conduct, and administer a Pre-Construction Conference at a designated location for each RA construction contract awarded to discuss project requirements, schedules,

procedures, submittals, payments, and establish a working understanding among parties. In compliance with the SOW (Task III. B.) , the following will also be accomplished during each of these meetings:

1. Define the roles, relationships, and responsibilities of all parties;
2. Review methods for documenting and reporting inspection data;
3. Review methods for distributing and storing documents and reports;
4. Review health and safety and work area security requirements and protocols;
5. Review the RA Construction Schedule;
6. Conduct a thorough site inspection to verify that the design criteria and the plans and specifications are understood and to review material and equipment storage locations and requirements.
7. Video tape and photograph site conditions during this conference to establish a record of site conditions prior to commencement of each contract of Remedial Action Construction.

Participants in the Pre-Construction Conferences may include the following as appropriate:

- members of the MFSSC,
- US EPA and SC DHEC,
- RA Coordinator,
- RA Construction Manager,
- Resident Construction Quality Assurance (CQA) Engineer,
- RA Health and Safety Coordinator,
- the RA Project Engineer,
- Sitework Construction Contractor,
- Well Installation Construction Contractor, and
- Treatment Systems Contractor and appropriate subcontract vendors.

This conference will be documented on a Meeting Summary Report including participants in attendance, issues discussed, clarifications provided, special or specific instructions, etc. The Meeting Summary Report will be distributed to all participants and other MFSSC designated parties.

3.5.2 Daily Meetings

Each RA contractor and their subcontractors and vendors working at the Site will hold morning "tail-gate" meetings before starting work to coordinate their construction operations, discuss health and safety requirements, scheduled work activities, etc. A sign-in log record will be prepared and utilized to document the participants and items discussed. These log records will be submitted to the RA Construction Manager on a daily basis for storage and maintenance of these records.

3.5.3 Progress Meetings

The RA Construction Manager will schedule and administer project progress meetings at the Site throughout progress of the Work at maximum weekly intervals on Friday afternoon or at other scheduled times as required. He/she will make physical arrangements for these meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within one week to participants, and those affected by decisions made at meetings.

The following participants may be in attendance for these progress meetings:

- RA Coordinator,
- RA Construction Manager,
- Resident Construction Quality Assurance (CQA) Engineer,
- RA Health and Safety Coordinator,
- the RA Project Engineer,
- Sitework Construction Contractor,
- Well Installation Construction Contractor,

- Treatment Systems Contractor and appropriate subcontract vendors,
- members of the MFSSC, US EPA, SC DHEC, and others as appropriate to topics on the agenda for each meeting.

The suggested agenda for each meeting will vary but will generally include :

- Review RA construction work progress,
- status of the RA Construction Schedule and adjustments thereto,
- delivery schedules,
- submittals,
- maintenance of quality standards,
- pending changes and substitutions,
- health and safety issues,
- site controls and coordination, and
- other items affecting the progress of RA construction work.

3.5.4 Monthly Project Management Meetings

The RA Coordinator will schedule and administer the Monthly Project Management Meetings throughout the progress of the RA construction work at a minimum on monthly intervals at scheduled times as required. He/she will make physical arrangements for these meetings, prepare agenda with copies for participants, preside at meetings, and record the meeting minutes.

The following participants may be in attendance for these Monthly Project Management Meetings:

- Members of the MFSSC,
- RA Coordinator,
- RA Construction Manager,
- Resident Construction Quality Assurance (CQA) Engineer,

- RA Health and Safety Coordinator,
- the RA Project Engineer,
- Sitework Construction Contractor,
- Well Installation Construction Contractor,
- Treatment Systems Contractor and appropriate subcontract vendors,
- US EPA, SC DHEC, and others as appropriate to topics on the agenda for each meeting.

The suggested agenda for each meeting will vary but will generally include :

- Review RA construction work progress,
- status of the RA Construction Schedule and adjustments thereto,
- status of RA construction contracts costs and other financial issues,
- submittals, deliverables, etc.,
- maintenance of quality standards,
- pending changes and substitutions,
- health and safety issues,
- site controls and coordination, and
- other items affecting the progress of RA construction work.

This meeting will be documented on a Meeting Summary Report including participants in attendance, issues discussed, clarifications provided, special or specific instructions, etc. The Meeting Summary Reports will be distributed to all participants and other MFSSC designated parties.

Section 4

CONSTRUCTION QUALITY ASSURANCE PLAN

4.1 Introduction

4.1.1 Purpose and Scope

The purpose of the Construction Quality Assurance (CQA) Plan is to present the principles and practices of construction quality assurance required by the United States Environmental Protection Agency (US EPA), to be implemented during the construction phase of the Medley Farm Remedial Action. Quality management involves both quality assurance and quality control activities to ensure, with a reasonable degree of certainty, that the Remedial Action construction activities meet or exceed the permitted design criteria, plans, specifications, and overall site objectives. This CQA Plan contains general procedures for the construction quality assurance of the ground water and soil vapor recovery and treatment systems that will be monitored and verified during the scope of the RA construction activities.

The CQA Plan includes a discussion and description of the Independent Quality Assurance Team (IQAT), as well as Site Construction Quality Assurance Procedures. The responsibility and authority of team members are discussed in Section 4.2.2 of the CQA Plan and personnel qualifications and experiences are discussed in Section 4.2.4. Monitoring and Control Testing Requirements are presented in Section 4.3.1 of the CQA Plan and Construction Quality Assurance Reporting is addressed in Section 4.3.2. This section has been provided to illustrate the level of documentation required to adequately report the CQA activities.

4.1.2 Quality Assurance Definitions

In the context of the CQA Plan, Construction Quality Assurance, and Construction Quality Control are defined as follows:

- Construction Quality Assurance (CQA): a planned systematic pattern of means and actions employed to provide confidence that items or services meet the contractual and regulatory requirements and will perform as specified and desired in service.
- Construction Quality Control (CQC): those actions which provide a means to measure and regulate the characteristics of an item or service to contractual and regulatory requirements.

In the context of the CQA Plan, the terms CQA and CQC are used as follows:

- CQA refers to measures taken by the MFSSC to determine if the construction contractors are in compliance with the design plans and specifications.
- CQC refers to measures taken by the construction contractors to determine compliance with the requirements for materials and workmanship as stated in the contract drawings and specifications.

4.1.3 References to Standards

The CQA Plan includes references to testing and installation procedures of the American Society for Testing and Materials (ASTM), the American Concrete Institute (ACI), the American Institute of Steel Construction (AISC), the Underwriters Laboratory (UL), the National Fire Protection Association (NFPA), the American National Standards Institute (ANSI), the National Electrical Manufacturers Association (NEMA), the National Electrical Contractors Association (NECA), and the American Association of State Highway and Transportation Organization (AASHTO).

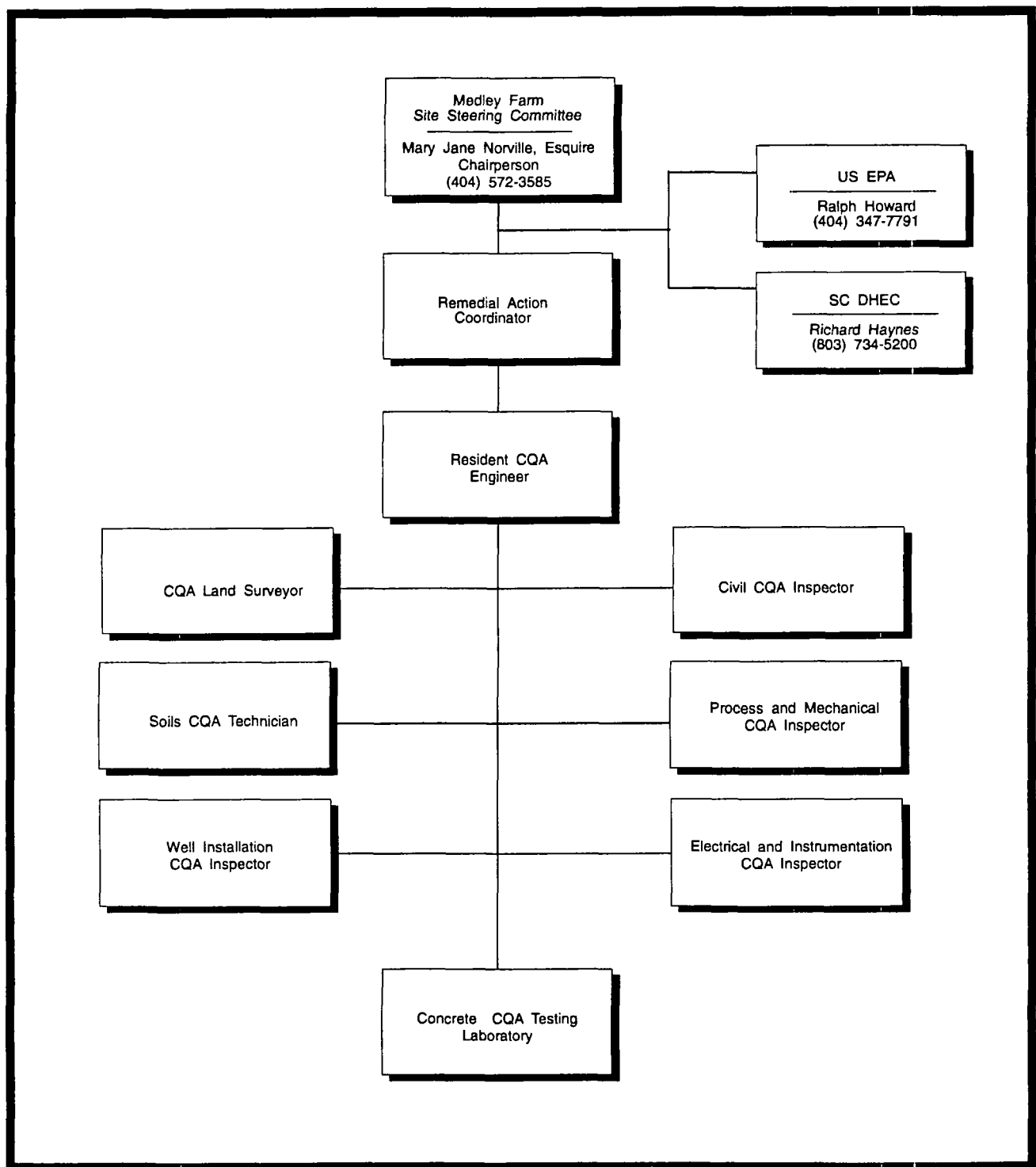
4.2 Independent Quality Assurance Team (IQAT)

4.2.1 Independent Quality Assurance Team (IQAT) Organization

The CQA Plan includes the involvement of an Independent Quality Assurance Team (IQAT) that will implement the control system for all aspects of the work specified in the Remedial Action Plan. This will be accomplished by conducting CQA inspections, as needed, that will be coordinated by the Resident CQA Engineer. The Resident CQA Engineer will report to the RA Coordinator, who will be responsible for communicating to the MFSSC and US EPA. Refer to Figure 4-1 for the IQAT organization chart. The IQAT will be comprised of qualified individuals with strong professional backgrounds and reputations for ethical conduct, previous work experiences in implementing CQA activities, and a demonstrated ability to perform the required CQA activities. These individuals will have a strong background in the varying engineering disciplines necessary to facilitate the design and CQA activities. The IQAT members will be independent of the construction contractor.

4.2.2 Responsibilities and Authority

The principal parties involved in the CQA activities during the installation of the ground water and soil vapor recovery and treatment systems include the US EPA/SC DHEC, the MFSSC, the RA Coordinator, the Resident CQA Engineer, the IQAT, and the construction contractors.



The general responsibilities and authorities of each of these parties is described in the following paragraphs. The responsibility and/or authority of a given party may be modified or expanded as dictated by the specific project needs during preconstruction meetings. These changes will be incorporated into the CQA Plan as deemed appropriate.

- **Permitting Agency:** The Regulatory Agencies (US EPA and SC DHEC) are authorized to issue the permit for construction of the ground water and soil vapor recovery and treatment systems based on review and acceptance of the Remedial Design and the RA Work Plan, Construction Management Plan, and Construction Quality Assurance Plan.
- **MFSSC:** The Medley Farm Site Steering Committee or MFSSC is responsible for coordinating the design and construction of the ground water and soil vapor recovery and treatment systems. The RA Coordinator will be the duly authorized representative of the MFSSC charged with the responsibility for coordinating the design and construction of the ground water and soil vapor recovery and treatment systems.
- **Remedial Action Coordinator:** The Remedial Action Coordinator is responsible for all communication with US EPA as directed by the MFSSC, and manages the Resident CQA Engineer and the IQAT. The Remedial Action Coordinator is the primary contact for the MFSSC and the Permitting Agency. This responsibility includes compliance with the permit and the submission of CQA documentation demonstrating that the systems were constructed in accordance with the design criteria, plans, and specifications. The Remedial Action Coordinator has the authority to select and dismiss parties charged with design and CQA. The Remedial Action Coordinator also has the authority to accept or reject modifications to design plans and specifications and CQA reports.
- **Resident CQA Engineer:** The Resident CQA Engineer is responsible for the coordination of the IQAT. The Resident CQA Engineer is also responsible for observing and documenting the construction activities related to the permit documents and the CQA Plan. In general, the responsibilities and authorities of the Resident CQA Engineer are as follows:
 - Complete understanding of the permit documents, design plans and specifications in relation to all aspects of the CQA Plan;
 - Review of construction schedules, participation in construction meetings, observation of field activities, and performance of CQA activities;

- Communications with US EPA, MFSSC, contractors, Remedial Action Coordinator, IQAT, and other involved parties during construction activities;
 - Performing independent on-site observation of the work in progress to assess compliance with the CQA Plan, permit documents, design plans and specifications;
 - Recognizing and reporting deviations from the CQA Plan, permit documents, design plans and specifications to the Remedial Action Coordinator;
 - Secure and maintain documents which approve changes to the CQA Plan, permit documents, design plans and specifications;
 - Verifying that CQA testing equipment meets testing and calibration requirements, and that tests are conducted according to standardized procedures defined in the CQA Plan;
 - Recording and maintaining test data;
 - Identifying CQA tested work that should be accepted, rejected, or further evaluated;
 - Verifying that corrective measures are implemented;
 - Documenting and reporting CQA activities to US EPA and the Remedial Action Coordinator on a monthly basis;
 - Maintaining a set of "as-built" record drawings during construction.
- **IQAT:** The IQAT will be comprised of technically qualified individuals that possess varying engineering, testing, and inspection capabilities to perform the project-specific inspections and verifications of the ground water and soil vapor recovery and treatment systems. The IQAT will report to the Resident CQA Engineer, and the Resident CQA Engineer will report to the Remedial Action Coordinator and US EPA. The IQAT will be responsible for developing the construction punchlists and will participate in the pre-final and final inspection process. The IQAT will consist of, but not be limited to, the following individuals:
 - Resident CQA Engineer,
 - CQA Land Surveyor,

- Well Installation CQA Inspector,
 - Soils CQA Technician,
 - Civil CQA Inspector,
 - Concrete CQA Testing Laboratory,
 - Process and Mechanical CQA Inspector, and
 - Electrical and Instrumentation CQA Inspector.
- **Construction Contractors:** The construction contractors are responsible for the CQC to ensure that the construction activities be performed using the procedures and equipment necessary to produce final results in conformance with the contract documents. The construction contractors are also responsible for the quality of the materials and the installation of materials in conformance with the contract documents. The construction contractors are responsible to submit a project-specific CQC Plan to the Remedial Action Coordinator and US EPA for review prior to the initiation of construction activities. The construction contractors are to prepare all required CQA submittals for the Resident CQA Engineer's review.

4.2.3 Project Meetings

To achieve a high degree of quality during construction, clear, open channels of communication are essential. The following meetings will be held, as appropriate:

- **Preconstruction Meeting:** Following the completion of the contract documents and selection of construction contractors, a resolution meeting involving all parties will be held. The purpose of the meeting is to begin planning for the coordination of tasks, anticipate problems, introduce key parties to one another, and, above all, present the CQA Plan. It is most important that the site procedures regarding testing, repair, and other key issues be understood and accepted. The RA Coordinator will document the meeting and minutes will be transmitted to all parties expeditiously.
- **Daily Meetings:** A daily meeting may be held between the construction contractors, subcontractors, the Resident CQA Engineer, and other involved parties as required to discuss, plan, and coordinate the work and the CQA activities to be performed on that day.
- **Progress Meeting:** A weekly progress meeting may be held between the remedial action coordinator, the Resident CQA Engineer, the IQAT member(s), the construction contractors, and other involved parties to discuss current progress, planned activities for the upcoming week, and new business. The Resident CQA Engineer will document the meeting and minutes will be transmitted to all parties expeditiously.

- **Problem or Work Deficiency Meeting:** A special meeting may be held when and if a problem or work deficiency, which may impact the RA Construction Schedule, is present or likely to occur. All parties involved should attend to discuss the problem or deficiency, review alternative solutions, and implement a revised plan to resolve the problem or deficiency as practical. The Resident CQA Engineer will document the meeting and minutes will be transmitted to all parties expeditiously.

4.2.4 Qualifications and Experience

The following qualifications will be required of the key personnel and organizations involved in the construction of the ground water and soil vapor recovery and treatment systems:

- **Remedial Action Coordinator:** The Remedial Action Coordinator will be pre-qualified and approved by the MFSSC. The Remedial Action Coordinator will be a qualified individual with experience in construction quality assurance and quality control, particularly on projects involving similar construction activities. The RA Coordinator will be solely responsible for the CQA personnel and their activities, as well as the preparation of a certification report to certify that the project has been constructed in accordance with the CQA Plan, permit documents, design plans, and specifications. The Remedial Action Coordinator will be capable of assigning technically qualified personnel to the project, including an on-site Resident CQA Engineer and IQAT members as needed.
- **Resident CQA Engineer:** The Resident CQA Engineer will be pre-qualified and approved by the MFSSC. The Resident CQA Engineer will possess a thorough knowledge of all aspects of the ground water and soil vapor recovery and treatment systems that are to be constructed as well as proven experience in the management of CQA activities.
- **IQAT:** The IQAT members will be pre-qualified and approved by the MFSSC. The IQAT members will be technically qualified in the specific engineering, testing, and inspection disciplines in order to adequately assess the completeness of the work.
- **Construction Contractors:** The construction contractors will be pre-qualified and approved by the MFSSC. The construction contractors will be reputable qualified contracting firms with experience on projects involving similar construction activities. The construction contractors will be capable of assigning the personnel and equipment required to perform the work within the requirements of the RA Construction schedule, and in compliance with the contract documents.

4.3 Construction Quality Assurance Procedures

4.3.1 Monitoring and Control Testing Requirements

Monitoring and control testing will be performed by the IQAT. Inspections will be initiated by the Resident CQA Engineer and the following IQAT disciplines:

- **CQA Land Surveying:** Surveying of lines and grades will be conducted by the CQA Land Surveyor (IQAT member) on an on-going basis to assist the contractors in complying with the required design plans and to provide documentation for record plans. All surveying will be performed under the direct supervision of a qualified, licensed registered land surveyor. Surveying personnel will be experienced in the provision of these services, including detailed accurate documentation.

The survey instruments used for this work will be precise and accurate to meet the CQA requirements. Survey instruments will be capable of reading to a precision of 0.01 of a foot and with a setting accuracy of 10 seconds. Calibration certificates for survey instruments will be submitted to the Resident CQA Engineer prior to initiation of surveying activities.

Surveying will be performed as soon as possible after completion of a given installation to facilitate progress and avoid delaying the next installation. The following surfaces will be surveyed, as a minimum, to determine lines and grades achieved during construction:

- Access Road stations;
- Alignment and inverts of culverts;
- Alignment and inverts of underground piping;
- Locations of equipment, equipment pads and shelters;
- Alignment and inverts of manholes;
- Surface of excavations (prior to subbase placements);
- Locations and elevations of all wells;
- Profiles, cross-sections, inverts, and alignments as deemed appropriate by the Resident CQA Engineer.

A copy of the original field survey notes will be submitted to the Resident CQA Engineer. The CQA Land Surveyor will produce record "as-built" plans as the project progresses. The field survey results will be documented on a set of record plans. All survey results will be certified by a land surveyor or professional engineer registered in the State of South Carolina and submitted to the Resident CQA Engineer for review and subsequent submittal to the remedial action coordinator and US EPA.

- **Well Installation CQA:** Strict adherence to the design plans, specifications, and Health and Safety requirements will be necessitated during the well installation activities. The well driller will be certified by the State of SC and will satisfy all applicable federal, state, and local statutes, regulations, and

ordinances regarding health and safety, including but not limited to, the standards contained in 29 CFR 1926 Construction and Industry and CFR 1910 General Industry with special attention to 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response, Interim Final Rule, U.S. Department of Labor, Occupational Safety and Health Administration.

The work will be performed by experienced personnel, using state-of-the-art equipment in good operating condition and free of leaks.

Drilling, well installation, and associated tasks will be observed by the Well Installation CQA Inspector (IQAT member). The well driller will not be on-site without the Well Installation CQA Inspector. No lubricants will be used in any manner that might possibly contaminate samples or wells.

In general, the Well Installation CQA Inspector will collect soil samples at approximate five-foot intervals beginning at the land surface. The samples will be collected using a split-barrel sampler in accordance with ASTM D 1586. The sample logs and any testing results will be submitted to the resident CQA engineer.

The well driller will provide the Well Installation CQA inspector with record "as-built" well construction information and well development documentation. Logs will be completed at the time of development and submitted to the Resident CQA Engineer. All pertinent CQA well installation documentation, including daily field progress reports and field notes will then be submitted to the Remedial Action Coordinator and US EPA.

- **Soils CQA:** Structural backfill, pipe trenching backfill, and aggregate course base will be observed by the Soils CQA Technician (IQAT member). The contractor will be required to compact the backfill and aggregate materials according to the design plans and specifications per the following:
 - Perform one Proctor test for every type of fill material specified.
 - Determine the moisture-density relation and maximum dry density by the Standard Proctor Test.
 - Compact backfills of three feet or less in depth to at least 95 percent of the maximum dry density of Standard Proctor Test.
 - Compact the top three feet of backfills greater than three feet in depth to at least 95 percent of the maximum dry density of Standard Proctor Test. Below that compact to at least 95 percent of the maximum dry density of Standard Proctor Test.
 - Compact aggregate base course to at least 98 percent of maximum density at optimum moisture.

- Perform one compaction field density test for every 1000 cubic yards of fill placed, but not less than three tests.
- Perform one compaction test for every 100 lineal feet of trench backfilled.
- Perform one compaction field density test for every 2500 square feet of aggregate base course.

The Soils CQA Technician will perform the specified inspection, sampling, and testing in accordance with the specified standards and the following testing methods:

ANSI/ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

ANSI/ASTM E329 - Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils: Sieve Analysis and Hydrometer.

ASTM D698 - Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. Rammer and 12-inch Drop: Standard Proctor.

ASTM D1140 - Standard Test Method for Amount of Material in Soils Finer Than the No. 200 Sieve: P200 Content.

ASTM D1556 - Standard Test Method for Density of Soil In Place by the Sand-Cone Method: Sand Cone Density Test.

ASTM D1557 - Standard Test Methods for Moisture-Density Relations of Soils & Soil-Aggregate Mixtures Using 10 lb. Rammer and 18-inch Drop: Modified Proctor.

ASTM D2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures: Natural Moisture Content.

ASTM D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Willow Depth): Nuclear Density Test.

ASTM D3017 - Standard Test Method for Moisture Content of Soil and Soil-Aggregate In Place by Nuclear Methods (Willow Depth): Nuclear Moisture Content.

ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils: Atterberg Limits.

The Soils CQA Technician will ascertain compliance of materials with requirements of contract documents, and will promptly notify the Resident CQA Engineer of observed irregularities or non-conformance of work. The Soils CQA Technician will perform additional inspections and tests until compliance or as required by the Resident CQA Engineer.

The Soils CQA Laboratory will submit, to the Resident CQA Engineer, a copy of the report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any difficulties reported by the inspection.

The Soils CQA Laboratory will maintain a full-time registered Engineer on staff to review services and will be authorized to operate in the State of South Carolina. All testing equipment will be calibrated at reasonable intervals with devices of an accuracy traceable to either NBS Standards or accepted values of natural physical constants.

All documentation of testing and test results will be submitted to the Resident CQA Engineer by the Soils CQA Technician and the Soils CQA Laboratory. All pertinent soils CQA documentation will then be forwarded to the Remedial Action Coordinator and US EPA.

- **Civil CQA:** The Civil CQA Inspector (IQAT member) will make visual inspections and observations of the major civil activities and installations for compliance with the design plans and specifications. These activities and installations and corresponding specification standards references include the following:

- Excavation and Backfill
- Geotextile Fabrics for Construction

Tensile Strength Test and Percent Elongation Test in accordance with ASTM D1682.

Burst Strength tested in accordance with Mullen Burst Test, ASTM D751.

Weight tested in accordance with ASTM D1910.

- Chain Link Fences and Gates

ANSI/ASTM A123 - Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

ANSI/ASTM F567 - Installation of Chain-Link Fence.

ASTM A116 - Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric.

ASTM A120 - Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary Uses.

ASTM A121 - Zinc-Coated (Galvanized) Steel Barbed Wire.

ASTM A153 - Zinc-Coating (hot-dip) on Iron and Steel Hardware.

ASTM A392 - Zinc-Coated Steel Chain-Link Fence Fabric.

ASTM A569 - Steel, Carbon (0.15 Maximum Percent), Hot-Rolled Sheet and Strip Commercial Quality.

- Aggregate Base Course

- Manholes and Clean-Outs

Precast Concrete Manholes and Adjusting Rings:
ASTM C478 Standard Specification for Precast Reinforced Concrete Manhole Sections.

Castings: ASTM A48 Grade 30 Specifications for Gray Iron Castings.

Rubber Gaskets: ASTM C443 Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

Flexible Plastic Gaskets: Type B AASHTO M 198 Specification for Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets, Type B Flexible Plastic Gaskets.

- Metering Manhole

ASTM D3753 - Standard Specification for Fiber Reinforced Manholes

- Corrugated Steel Pipe and Fittings

AASHTO M36 Standard Specifications for Metallic (Zinc or Aluminum) coated Corrugated Steel Culverts and Underdrains.

AASHTO M190 Standard Specification for Bituminous Coated Corrugated Metal Culvert Pipe and Arches.

- Ductile Iron Pipe and Fittings

ANSI A21.51 (AWWA C151) Ductile Iron Pipe and Fittings

- Topsoil

- Seeding

The Civil CQA Inspector will review the required contractor material submittals for the referenced items above, and will notify the Resident CQA Engineer of any discrepancies. All reviewed submittals and any inspection logs, reports, or documents generated will be submitted to the Resident CQA Engineer. All pertinent Civil CQA documentation will be forwarded to the Remedial Action Coordinator and US EPA.

- **Concrete CQA Testing Laboratory:** Concrete slabs, equipment foundations, and miscellaneous concrete placements will be tested for compliance with ACI 301-84 and the design plans and specifications by a reputable Concrete CQA Testing Laboratory (IQAT member). The Concrete CQA Testing Laboratory will be contacted by the Resident CQA Engineer prior to the time of concrete placement, and will collect and analyze the samples.

All test results will be forwarded to the Resident CQA Engineer by the Concrete CQA Testing Laboratory. This documentation will then be forwarded to the Remedial Action Coordinator and US EPA.

- **Process and Mechanical CQA:** The Process and Mechanical CQA Inspector (IQAT member) will make visual inspections and observations of the major mechanical installations for compliance with the design plans and specifications. These installations and corresponding specification standards references include the following:

- Pressure Pipe - Schedule 40 and 80 PVC

ASTM F402 - Practice for Safe Handling of Solvent Cements and Primers Used for Joining Thermoplastic Pipe and Fittings.

ASTM D1784 - Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

ASTM D1785 - Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

ASTM D2464 - Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.

ASTM D2466 - Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

ASTM D2467 - Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.

ASTM D2564 - Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

ASTM D2672 - Standard Specification for Joints for IPS PVC Pipe Using Solvent Cement.

ASTM D2774 - Practice for Underground Installation of Thermoplastic Pressure Piping.

ASTM D2855 - Making Solvent-Cemented Joints With Poly (Vinyl Chloride) (PVC) Pipe and Fittings.

- Jet Pump System
- Valves
- Gravity Sewer Pipe (PVC)

ASTM D2321 - Standard Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

ASTM D2665 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.

ASTM D2672 - Standard Specification for Joints for IPS PVC Pipe Using Solvent Cement.

ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings. Use gasketed joints only.

ASTM D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

ASTM F477 - Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

- Centrifugal Pumps

- UL 778-Motor-operated Water Pumps

- NFPA 70 National Electric Code

- Fiberglass Tanks

- ASTM D3299 - 88

- Air Stripping System

- Piping Insulation

- ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.

- ASTM C177 - Steady-state Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.

- ASTM C335 - Steady-State Heat Transfer Properties of Horizontal Pipe Insulation.

- ASTM C518 - Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

- ASTM C533 - Calcium Silicate Block and Pipe Thermal Insulation.

- ASTM C585 - Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).

- ASTM C921 - Properties of Jacketing Materials for Thermal Insulation.

- ASTM E84 - Surface Burning Characteristics of Building Materials.

- ASTM E96 - Water Vapor Transmission of Materials

- NFPA 255 - Surface Burning Characteristics of Building Materials.

- UL 723 - Surface Burning Characteristics of Building Materials.

- Soil Vapor Extraction System

All piping to be flushed with sewer cleaning equipment when construction is completed, but prior to final acceptance. All pressure testing of piping will be in accordance with the plans and specifications and the accepted testing procedures.

The Process and Mechanical CQA Inspector will review the required contractor material submittals for the referenced items above, and will notify the Resident CQA Engineer of any discrepancies. All reviewed submittals and any inspection logs, reports, or documents generated will be submitted to the Resident CQA Engineer. All pertinent Process and Mechanical CQA documentation will be forwarded to the Remedial Action Coordinator and US EPA.

- **Electrical and Instrumentation CQA:** The Electrical and Instrumentation CQA Inspector (IQAT member) will make visual inspections and observations of the major electrical installations for compliance with the design plans and specifications. These installations and corresponding specification standards references include the following:

- **Conduits**

ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.

ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.

ANSI C80.5 - Rigid Aluminum Conduit.

ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

ANSI/NFPA 70 - National Electrical Code.

NECA "Standard of Installation."

NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40) and EPC-80).

NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

- **Wire and Cable**

ANSI/NFPA 70 - National Electrical Code.

- Boxes

ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.

ANSI/NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.

ANSI/NFPA 70 - National Electrical Code.

NEMA 250 - Enclosure for Electrical Equipment (1000 Volts Maximum).

- Grounding and Bonding

ANSI/NFPA 70 - National Electrical Code

- Supporting Devices

NECA - National Electrical Contractors Associations

ANSI/NFPA 70 - National Electrical Code

- Electrical Identification

ANSI/NFPA 70 - National Electrical Code

- Utility Service Entrance

ANSI/NFPA 70 - National Electrical Code

- Panel Boards

NECA (National Electrical Contractors Association) "Standard of Installation."

NEMA AB 1 - Molded Case Circuit Breakers.

NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.

NEMA KS 1 - Enclosed Switches.

NEMA PB 1 - Panelboards.

NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

NFPA 70 - National Electrical Code.

- Enclosed Motor Controllers

NFPA 70 - National Electrical Code.

NECA "Standard of Installation," published by National Electrical Contractors Association.

NEMA AB 1 - Molded Case Circuit Breakers.

NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.

NEMA ICS 6 - Enclosures for Industrial Controls and Systems.

NEMA KS 1 - Enclosed Switches.

- Heating Cables

The Electrical and Instrumentation CQA Inspector will review the required contractor material submittals for the referenced items above, and will notify the Resident CQA Engineer of any discrepancies. All reviewed submittals and any inspection logs, reports, or documents generated will be submitted to the Resident CQA Engineer.

The Electrical and Instrumentation CQA Inspector will perform, as a minimum, the following:

- Inspect wire and cable for physical damage and proper connection;
- Measure tightness of bolted connections and compare torque measurements with the manufacturer's recommended values;
- Verify continuity of each branch circuit conductor;
- Inspect grounding and bonding system conductors and connections for tightness and proper installation;
- Use suitable test instruments to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method;

- Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits;
- Inspect panelboard for physical damage, proper alignment, anchorage, and grounding. check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses;
- Inspect and test each enclosed motor controller to NEMA ICS2.
- Test continuity of heating cable.
- Measure heating cable insulation resistance to manufacturer's recommended values. Use test instruments in accordance with manufacturer's instructions.
- Perform continuity and insulation resistance test on completed heating cable installation.
- Measure voltage and current at each heating cable.
- Submit written test report showing values measured on each test for each heating cable.

All pertinent Electrical and Instrumentation CQA documentation will be forwarded to the Remedial Action Coordinator and US EPA.

4.3.2 Construction Quality Assurance Reporting

An effective CQA Plan depends largely on recognition of all construction activities that should be monitored, and on assigning responsibilities for the monitoring of specific activities. This is most effectively accomplished and verified by the documentation of quality assurance activities. The Resident CQA Engineer will document, with the assistance of the IQAT, that the quality assurance requirements have been properly addressed and satisfied.

The Resident CQA Engineer will provide the Remedial Action Coordinator with signed descriptive remarks, data sheets, logs, and test results to verify that all monitoring activities have been carried out completely. The Resident CQA Engineer will also maintain a complete

set of design plans and specifications, the CQA Plan, testing procedures, daily logs, and any other pertinent documents at the jobsite.

Standard reporting procedures will include the preparation of a daily CQA report (refer to Appendix L) which, as a minimum, will include the following:

- Date, project name, location;
- Data weather conditions;
- Information on meetings held or discussions that took place:
 - Name of parties to discussion;
 - Relevant subject matter or issues;
 - Decisions reached; and
 - Activities planned and their schedule;
- Descriptions and locations of ongoing construction;
- A summary of field test results as verified by the IQAT;
- Calibrations or recalibration of testing equipment;
- Equipment and materials received;
- Construction contractors' work force and equipment on-site;
- Any pertinent information useful to the CQA Plan;
- Resident CQA Engineer's signature.

Where appropriate, the Resident CQA Engineer will record observations of construction and CQA-related activities on project-specific logs and data sheets. The IQAT will also record their observations of CQA-related activities (refer to Appendix L) as applicable and submit the results to the Resident CQA Engineer.

Photographic reporting will serve as a pictorial record of the work progress, problems and mitigation activities. Photographs are to be numbered, dated, and identified by activity, and then cross-referenced with observation photo logs for future reference. The Resident CQA Engineer has the responsibility of photographic reporting.

At the completion of the work, final documentation will be prepared under the direction of the Remedial Action Coordinator and submitted to the US EPA. As a minimum, the final report will include:

- Summaries of all construction activities;
- Daily CQA Reports;
- Observation logs and field test data sheets;
- Laboratory test data sheets;
- Changes from design plans and specifications;
- Record "as-built" plans;
- Photographic documentation; and
- Seal and signature by a registered professional engineer.

U . S . E P A R E G I O N I V

SDMS

Unscannable Material Target Sheet

DocID: 10292901 Site ID: SCP980558142

Site Name: Mealey Farm

Nature of Material:

Map: ✓

Computer Disks: _____

Photos: _____

CD-ROM: _____

Blueprints: _____

Oversized Report: _____

Slides: _____

Log Book: _____

Other (describe): Remedial Action Construction Schedule

Amount of material: ①

Please contact the appropriate Records Center to view the material.

APPENDIX A
MEDLEY FARM CONSENT DECREE REQUIREMENTS
FOR THE REMEDIAL ACTION WORK PLAN

I. BACKGROUND

A. The United States of America (the "United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), filed a complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9606 and 9607.

B. The United States in its complaint seeks: (1) reimbursement of costs incurred by EPA and the Department of Justice for response actions at the Medley Farm Superfund Site (the "Site") in Gaffney, Cherokee County, South Carolina, together with accrued interest; (2) performance of studies and response work by the Defendants at the Site in conformity with the Record of Decision (as defined below) and the National Contingency Plan, 40 C.F.R. Part 300 (as amended) (the "NCP"); (3) a declaration of Defendants' liability for future response costs; and (4) such other relief as the Court deems appropriate.

C. In accordance with the NCP and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of South Carolina (the "State") on June 10, 1991 of negotiations with potentially responsible parties regarding the implementation of the remedial design and remedial action for the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this settlement.

D. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the Department of the Interior and the

state natural resource trustees on June 10, 1991 of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal and state trusteeship and encouraged the trustees to participate in the negotiation of this Consent Decree.

E. The Defendants that have entered into this Consent Decree (the "Settling Defendants") do not admit any liability to the Plaintiff arising out of the transactions or occurrences alleged in the complaint.

F. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on March 14, 1990, 55 Fed. Reg. 9701;

G. In response to a release or a substantial threat of a release of hazardous substances at or from the Site, certain of the Settling Defendants commenced on January 29, 1988, a Remedial Investigation and Feasibility Study ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.430;

H. The Settling Defendants referred to in Paragraph G above completed a Remedial Investigation ("RI") Report on February 15, 1991 and a Feasibility Study ("FS") Report on May 2, 1991. EPA approved the RI Report and the FS Report on May 30, 1991.

I. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the proposed plan for remedial action on February 12, 1991, in the Greenville News, which is a major local

newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Regional Administrator based the selection of the response action.

J. The decision by EPA on the remedial action to be implemented at the Site is embodied in a final Record of Decision (the "ROD"), executed on May 29, 1991, on which the State had a reasonable opportunity to review and comment and on which the State has given its concurrence. The ROD includes a responsiveness summary to the public comments. Notice of the final plan was published on August 21, 1991, in accordance with Section 117(b) of CERCLA.

K. Based on the information presently available to EPA, EPA believes that the Work will be properly and promptly conducted by the Settling Defendants.

L. Solely for the purposes of Section 113(j) of CERCLA, 42 U.S.C § 9613(j), the Remedial Action selected by the ROD and the Work to be performed by the Settling Defendants shall constitute a response action taken or ordered by the President.

M. The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and that implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the

Parties, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal jurisdiction over the Settling Defendants. Solely for the purposes of this Consent Decree and the underlying complaint, Settling Defendants waive all objections and defenses that they may have to jurisdiction of this Court or to venue in this District. Settling Defendants shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

III. PARTIES BOUND

2. This Consent Decree applies to and is binding upon the United States and upon Settling Defendants and their heirs, successors and assigns. Any change in ownership or corporate status of a Settling Defendant including, but not limited to, any transfer of assets or real or personal property, shall in no way alter such Settling Defendant's responsibilities under this Consent Decree.

3. Settling Defendants shall provide a copy of this Consent Decree to each contractor hired under a contract in an amount in excess of \$10,000 to perform a portion of the Work (as defined below) required by this Consent Decree. Settling Defendants or

their contractors shall provide written notice of this Consent Decree to each subcontractor hired under a contract in an amount in excess of \$10,000 to perform any portion of the Work required by this Consent Decree. Settling Defendants shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work contemplated herein in accordance with this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Settling Defendants within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meanings assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.

"Consent Decree" shall mean this Decree and all appendices attached hereto. In the event of conflict between this Decree and any appendix, this Decree shall control.

"Day" shall mean a calendar day unless expressly stated to be a

working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

"EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

"DHEC" shall mean the South Carolina Department of Health and Environmental Control and any successor departments or agencies of the State of South Carolina.

"Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in overseeing the Work, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Sections VII, VIII, and X, including but not limited to, attorney's fees and the amount of just compensation for access, Section XVI and Paragraph 83 of Section XXII, and the costs of reviewing or developing plans, reports and other items pursuant to this Consent Decree, verifying the Work, or otherwise implementing or enforcing this Consent Decree. Future Response Costs shall also include all costs, including direct and indirect costs, incurred by the United States in connection with the Site between July 1, 1991 and the effective date of this Consent Decree and all interest on the Past Response Costs from July 1, 1991 to the date of payment

of the Past Response Costs as set forth in Paragraph 54 of this Consent Decree.

"National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, including, but not limited to, any amendments thereto.

"Operation and Maintenance" or "O & M" shall mean all activities required to maintain the effectiveness of the Remedial Action as required under the Operation and Maintenance Plan approved or developed by EPA pursuant to this Consent Decree, the ROD, and the Scope of Work ("SOW").

"Paragraph" shall mean a portion of this Consent Decree identified by an arabic numeral or an upper case letter.

"Parties" shall mean the United States and the Settling Defendants.

"Past Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs and interest, that the United States incurred with regard to the Site between June 29, 1987 and June 30, 1991.

"Performance Standards" shall mean those cleanup standards, standards of control, and other substantive requirements, criteria or limitations set forth in the ROD and the SOW and the tables attached thereto, all of which are incorporated herein by reference and any Alternative Performance Standards established pursuant to Paragraph E (Contingency Measures) of the Remedy

Components portion of the Overview of the Remedy Section of the SOW.

"Plaintiff" shall mean the United States.

"RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act).

"Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to the Site signed on May 29, 1991, by the Regional Administrator, EPA Region IV, and all attachments thereto.

"Remedial Action" shall mean those activities, except for Operation and Maintenance, to be undertaken by the Settling Defendants to implement the final plans and specifications submitted by the Settling Defendants pursuant to the Remedial Design Work Plan and approved by EPA.

"Remedial Action Work Plan" shall mean the document submitted by the Settling Defendants pursuant to Paragraph 12.a of this Consent Decree and described more fully in Paragraph 12.b.

"Remedial Design" shall mean those activities to be undertaken by the Settling Defendants to develop the final plans and specifications for the Remedial Action pursuant to the Remedial Design Work Plan.

"Remedial Design Work Plan" shall mean the document submitted by the Settling Defendants pursuant to Paragraph 11.b of this Consent Decree and described more fully in Paragraph 11.c.

"Scope of Work" or "SOW" shall mean the scope of work for

implementation of the Remedial Design, Remedial Action, and Operation and Maintenance at the Site, as set forth in Appendix B to this Consent Decree and any modifications made in accordance with Section XXXII (Modification) of this Consent Decree.

"Section" shall mean a portion of this Consent Decree identified by a roman numeral.

"Settling Defendants" shall mean those Parties identified in Appendix D.

"Site" shall mean the Medley Farm Superfund Site, encompassing an approximately seven acre parcel of land within a 65.4 acre parcel of land owned by Ralph Medley and located off of Burnt Gin Road (Highway 72), approximately six miles south of the City of Gaffney, South Carolina, off of State Route 18, in White Plains Township, Cherokee County, South Carolina and depicted more particularly on the map attached as Appendix C.

"State" shall mean the State of South Carolina.

"Supervising Contractor" shall mean the principal contractor retained by the Settling Defendants to supervise and direct implementation of the Work under this Consent Decree.

"United States" shall mean the United States of America.

"Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9603(27); and (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 9603(27).

"Work" shall mean all activities Settling Defendants are

required to perform under this Consent Decree, except those required by Section XXVI (Retention of Records).

V. GENERAL PROVISIONS

5. Objectives of the Parties

The objective of the Parties in entering into this Consent Decree is to protect public health and welfare and the environment from releases or threatened releases of Waste Material from the Site. This objective shall be accomplished by the design and implementation of the Remedial Action and Operation & Maintenance at the Site by the Settling Defendants.

6. Commitments by Settling Defendants

a. Settling Defendants shall finance and perform the Work in accordance with this Consent Decree, including, but not limited to, the SOW and all plans, standards, specifications, and schedules set forth in or developed and approved by EPA pursuant to this Consent Decree. Settling Defendants shall also reimburse the United States for Past Response Costs and Future Response Costs as provided in this Consent Decree.

b. The obligations of Settling Defendants to finance and perform the Work and to pay amounts owed the United States under this Consent Decree are joint and several. In the event of the insolvency of one or more of the Settling Defendants, or the failure of any one or more Settling Defendants to implement the requirements of this Consent Decree, the remaining Settling Defendants shall complete all such requirements.

7. Compliance With Applicable Law

All activities undertaken by Settling Defendants pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal and state laws and regulations. Settling Defendants must also comply with all applicable or relevant and appropriate requirements of all federal and state environmental laws as set forth in the ROD and the SOW. The activities conducted pursuant to this Consent Decree, if approved by EPA, shall be considered to be consistent with the NCP.

8. Permits

a. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.5 of the NCP, no permit shall be required for any portion of the Work conducted entirely on the Site. Where any portion of the work requires a federal or state permit or approval, Settling Defendants shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. The Settling Defendants may seek relief under the provisions of Section XIX (Force Majeure) of this Consent Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

c. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

VI. PERFORMANCE OF THE WORK BY SETTling DEFENDANTS

9. Monitoring

Monitoring shall be conducted pursuant to Paragraph A (Monitoring) of the Remedy Components Section of the Overview of the Remedy Section of the SOW and shall continue until EPA has certified that the Work has been completed pursuant to Paragraph 47.b of this Consent Decree.

10. Selection of Supervising Contractor

a. All aspects of the Work to be performed by Settling Defendants pursuant to this Section VI (Performance of the Work by Settling Defendants), Section VII (Additional Response Actions), Section VIII (EPA Periodic Review), and Section IX (Quality Assurance, Sampling and Data Analysis) of this Consent Decree shall be under the direction and supervision of the Supervising Contractor, the selection of which shall be subject to disapproval by EPA. Within 10 days after the lodging of this Consent Decree, Settling Defendants shall notify EPA in writing of the name, title, and qualifications of any contractor proposed to be the Supervising Contractor. EPA will thereafter issue a notice of disapproval pursuant to Paragraph 10.b. below or an authorization to proceed. If at any time thereafter, Settling Defendants propose to change a Supervising Contractor, Settling Defendants shall give notice to EPA and shall obtain an authorization to proceed from EPA before the new Supervising Contractor performs, directs, or supervises any Work under this Consent Decree.

b. If EPA disapproves a proposed Supervising Contractor, EPA will notify Settling Defendants in writing of the disapproval and the reasons for the disapproval. Settling Defendants shall submit to EPA a list of contractors, including the qualifications of each contractor, that would be acceptable to Settling Defendants within thirty days of receipt of EPA's disapproval of the contractor previously proposed. EPA will thereafter provide written notice to Settling Defendants of the names of the contractor(s) that it disapproves and authorization to proceed with respect to any of the other contractors. Settling Defendants may select any contractor from the list of contractors that are not disapproved and shall notify EPA of the name of the contractor selected within 21 days of EPA's authorization to proceed.

c. If EPA fails to provide written notice of its authorization to proceed or disapproval as provided in this Section and this failure prevents the Settling Defendants from meeting one or more deadlines in a plan approved by the EPA pursuant to this Consent Decree, Settling Defendants may seek relief under the provisions of Section XIX (Force Majeure) hereof.

11. Remedial Design.

a. Within 45 days of the latter of (i) EPA's issuance of an authorization to proceed pursuant to Paragraph 10 and (ii) the lodging of this Consent Decree, Settling Defendants shall submit to EPA and the State a Treatability Study Work Plan (the "TSWP"),

a Health and Safety Plan and a Field Sampling and Analysis Plan (the "FSAP"), all pursuant to Paragraphs D, E and C, respectively, of Task I (Scoping and Initial Data Collection Activities) of the SOW. Upon approval of the TSWP and the FSAP by EPA, after a reasonable opportunity for review and comment by the State, and submittal of the Health and Safety Plan for all field activities to EPA and the State, Settling Defendants shall implement the TSWP and the FSAP. The Settling Defendants shall submit to EPA and the State all plans, submittals and other deliverables required under the approved TSWP and the FSAP in accordance with the approved schedule for review and approval pursuant to Section XII (Submissions Requiring Agency Approval). Unless otherwise directed by EPA, Settling Defendants shall not commence treatability studies or the field sampling and analysis activities at the Site prior to approval of the TSWP and the FSAP, as appropriate.

b. Within 60 days of the approval of all documents submitted pursuant to the TSWP and the FSAP, Settling Defendants shall submit to EPA and the State a work plan for the design of the Remedial Action at the Site (the "Remedial Design Work Plan"). The Remedial Design Work Plan shall provide a detailed approach for designing the remedy set forth in the ROD in accordance with the SOW and, upon its approval by EPA, shall be incorporated into and become enforceable under this Consent Decree.

c. The Remedial Design Work Plan shall include plans and

schedules for implementation of all remedial design and pre-design tasks identified in the SOW, including, but not limited to, plans and schedules for the completion of: (1) if determined to be necessary by EPA, a remedial design sampling and analysis plan (including, but not limited to, a Remedial Design Quality Assurance Project Plan (RD QAPP) in accordance with Section IX (Quality Assurance, Sampling and Data Analysis)); (2) the Remedial Design Project Operations Plan (RD POP)); (3) a preliminary design submittal; and (4) a prefinal/final design submittal. In addition, the Remedial Design Work Plan shall include a schedule for completion of the Remedial Design.

d. Upon approval of the Remedial Design Work Plan by EPA, after a reasonable opportunity for review and comment by the State, Settling Defendants shall implement the Remedial Design Work Plan. The Settling Defendants shall submit to EPA and the State all plans, submittals and other deliverables required under the approved Remedial Design Work Plan in accordance with the approved schedule for review and approval pursuant to Section XII (Submissions Requiring Agency Approval). Unless otherwise directed by EPA, Settling Defendants shall not commence further Remedial Design activities at the Site prior to approval of the Remedial Design Work Plan.

e. The preliminary design submittal shall include, at a minimum, the following: (1) design criteria; (2) results of treatability studies; (3) results of additional field sampling; (4) project delivery strategy; (5) preliminary plans, drawings

and sketches; (6) specifications in outline form; (7) a plan for satisfying permitting requirements; and (8) preliminary construction schedule.

f. The pre-final/final design submittal shall include, at a minimum, the following: (1) final plans and specifications; (2) a final construction schedule; (3) Operation and Maintenance Plan; (4) Field Sampling Plan (directed at measuring progress towards meeting Performance Standards); and (5) Contingency Plan.

12. Remedial Action.

a. Within 45 days after the approval of the final design submittal, Settling Defendants shall submit to EPA and the State, a work plan for the performance of the Remedial Action at the Site (the "Remedial Action Work Plan"). The Remedial Action Work Plan shall provide for construction of the remedy, in accordance with the SOW, as set forth in the design plans and specifications in the approved final design submittal. Upon its approval by EPA, the Remedial Action Work Plan shall be incorporated into and become enforceable under this Consent Decree. At the same time as they submit the Remedial Action Work Plan, Settling Defendants shall submit to EPA and the State any revisions to the Site Health and Safety Plan for field activities required by the Remedial Action Work Plan.

b. The Remedial Action Work Plan shall include the following: (1) the schedule for completion of the Remedial Action; (2) the method for selection of the contractor; (3) a

schedule for developing and submitting other required Remedial Action plans (i.e., the Remedial Action Sampling and Analysis Plan (RA SAP); (4) a groundwater monitoring plan; (5) methods for satisfying permitting requirements; (6) a methodology for implementation of the Operation and Maintenance Plan; (7) a methodology for implementation of the Contingency Plan; (8) a Construction Quality Assurance Project Plan (CQAPP), which shall detail the approach to quality assurance during construction activities at the Site, shall specify an independent quality assurance team ("IQAT"), as described in the SOW, to conduct a quality assurance program during the construction phase of the project; (9) a construction quality control plan (by constructor); and (10) procedures and plans for the decontamination of equipment and the disposal of contaminated materials. The Remedial Action Work Plan also shall include a schedule for implementation of all Remedial Action tasks identified in the final design submittal and shall identify the initial formulation of the Settling Defendants' Remedial Action Project Team (which Team shall include the Supervising Contractor).

c. Upon approval of the Remedial Action Work Plan by EPA, after a reasonable opportunity for review and comment by the State, Settling Defendants shall implement the activities required under the Remedial Action Work Plan. The Settling Defendants shall submit to EPA and the State all plans, submittals, or other deliverables required under the approved

Remedial Action Work Plan in accordance with the approved schedule for review and approval pursuant to Section XII (Submissions Requiring Agency Approval). Unless otherwise directed by EPA, Settling Defendants shall not commence physical on-site activities at the Site prior to approval of the Remedial Action Work Plan.

13. The Work performed by the Settling Defendants pursuant to this Consent Decree shall, at a minimum, include the obligation to achieve the Performance Standards.

14. Settling Defendants acknowledge and agree that nothing in this Consent Decree, the SOW, or the Remedial Design or Remedial Action Work Plans constitutes a warranty or representation of any kind by Plaintiff that compliance with work requirements set forth in the SOW and the Work Plans will achieve the Performance Standards. Settling Defendants' compliance with the work requirements shall not foreclose Plaintiff from seeking compliance with all terms and conditions of this Consent Decree, including, but not limited to, achieving the applicable Performance Standards.

15. Settling Defendants shall, prior to any shipment of Waste Material from the Site to any off-Site waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator of such shipment of Waste Material, as required by the NCP § 300.440.

a. The Settling Defendants shall include in the written

notification the following information, where available: (1) the name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. The Settling Defendants shall notify the state in which the planned receiving facility is located of any major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by the Settling Defendants following the award of the contract for Remedial Action construction. The Settling Defendants shall provide the information required by Paragraph 15.a as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

VII. ADDITIONAL RESPONSE ACTIONS

16. In the event that EPA determines or the Settling Defendants propose that additional response actions are necessary to meet the Performance Standards or to carry out the remedy selected in the ROD, notification of such additional response actions shall be provided to the Project Coordinator for the other party.

17. Within 30 days of receipt of notice from EPA pursuant to Paragraph 16 that additional response actions are necessary, or within such longer time as may be specified by EPA, Settling

Defendants shall submit for approval by EPA, after reasonable opportunity for review and comment by the State, a work plan for the additional response actions. The plan shall conform to the applicable requirements of Paragraphs 11 and 12. Upon approval of the plan pursuant to Section XII (Submissions Requiring Agency Approval), Settling Defendants shall implement the plan for additional response actions in accordance with the schedule contained therein.

18. Any additional response actions that Settling Defendants propose are necessary to meet the Performance Standards or to carry out the remedy selected in the ROD shall be subject to approval by EPA, after reasonable opportunity for review and comment by the State, and, if authorized by EPA, shall be completed by Settling Defendants in accordance with plans, specifications and schedules approved by EPA pursuant to Section XII (Submissions Requiring Agency Approval).

19. Settling Defendants may invoke the procedures set forth in Section XX (Dispute Resolution) to dispute EPA's determination that additional response actions are necessary to meet the Performance Standards or to carry out the remedy selected in the ROD. Such disputes shall be resolved pursuant to Paragraphs 63-66 of this Consent Decree.

VIII. EPA PERIODIC REVIEW

20. a. Settling Defendants shall conduct any studies and investigations as requested by EPA as necessary in order to permit EPA to conduct reviews at least every five years as

required by Section 121(c) of CERCLA, 42 U.S.C. § 9621(c).

21. If required by Sections 113(k)(2) or 117 of CERCLA, 42 U.S.C. §§ 9613(k)(2) or 9617, Settling Defendants and the public shall be provided with an opportunity to confer with EPA on any additional activities proposed by EPA during the five (5) year review process and to submit written comments for the record during the public comment period. After the period for submission of written comments is closed, the Regional Administrator, EPA Region IV, or his/her delegate, shall determine in writing if further actions are appropriate.

22. If the Regional Administrator, EPA Region IV, or his/her delegate, determines that information received, in whole or in part, during the review conducted pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), indicates that the Remedial Action is not protective of human health and the environment, the Settling Defendants shall undertake any further response actions EPA has determined are appropriate, unless their liability for such further response actions is barred by the Covenant Not to Sue set forth in Section XXII. Settling Defendants shall submit a plan for such work to EPA for approval in accordance with the procedures set forth in Section VI (Performance of the Work by Settling Defendants) and shall implement the plan approved by EPA. The Settling Defendants may invoke the procedures set forth in Section XX (Dispute Resolution) to dispute (1) EPA's determination that the remedial action is not protective of human health and the environment, (2)

EPA's selection of the further response actions ordered, or (3) EPA's determination that the Settling Defendants' liability for the further response actions requested is reserved in Paragraphs 79, 80 or 82 or otherwise not barred by the Covenant Not to Sue set forth in Section XXII. Notwithstanding any terms in this Paragraph to the contrary, EPA reserves the right to take action pursuant to Sections 104, 106 and 107 of CERCLA, 42 U.S.C. §§ 9604, 9606 and 9607.

IX. QUALITY ASSURANCE, SAMPLING, and DATA ANALYSIS

23. Settling Defendants shall use quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance and monitoring samples in accordance with EPA's "Interim Guidelines and Specifications For Preparing Quality Assurance Project Plans," December 1980, Guidance (EPA/540/G87/003 and 004); "EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, (EPA 330/9-78-001-R); and the Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual, and subsequent amendments to such guidelines upon notification by EPA to Settling Defendants of such amendments. Amended guidelines shall apply only to procedures conducted after such notification. Prior to the commencement of any monitoring project under this Consent Decree, Settling Defendants shall submit to EPA for approval, after a reasonable opportunity for review and comment by the State, a Quality Assurance Project Plan ("QAPP") that is consistent with the SOW, the NCP, the above-identified guidance

and all other applicable guidance documents. If relevant to the proceeding, the Parties agree that validated sampling data generated by Settling Defendants in accordance with the QAPP(s) and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Decree. Settling Defendants shall assure that EPA personnel and EPA's authorized representatives are allowed access at reasonable times to all laboratories utilized by Settling Defendants in implementing this Consent Decree. In addition, Settling Defendants shall assure that such laboratories shall analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring. Settling Defendants shall assure that the laboratories utilized by them for the analysis of samples taken pursuant to this Decree perform all analyses according to accepted EPA methods. Accepted EPA methods consist of those methods which are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis," and the "Contract Lab Program Statement of Work for Inorganic Analysis," dated February 1988, and any amendments made thereto during the course of implementing this Decree. Settling Defendants shall assure that all laboratories used by them for analysis of samples taken pursuant to this Consent Decree participate in an EPA or EPA-equivalent QA/QC program.

24. Upon request, the Settling Defendants shall allow split or duplicate samples to be taken by EPA or its authorized representatives. Settling Defendants shall notify EPA not less than 15 days in advance of any sample collection activity unless

shorter notice is agreed to in advance by EPA. In addition, EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow the Settling Defendants to take split or duplicate samples of any samples it takes as part of the Plaintiff's oversight of the Settling Defendants' implementation of the Work.

25. Within 7 days of a request by EPA, Settling Defendants shall provide EPA with 3 copies of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Settling Defendants with respect to the Site and/or the implementation of this Consent Decree.

26. Notwithstanding any provision of this Consent Decree, the United States hereby retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

X. ACCESS

27. Commencing upon the date of lodging of this Consent Decree, the Settling Defendants agree to provide the United States and its representatives, including EPA and its contractors, with access at all reasonable times to the Site and any other property to which access is required for the implementation of this Consent Decree, to the extent access to the property is controlled by Settling Defendants, for the purposes of conducting any activity related to this Consent Decree including, but not limited to:

- a. Monitoring the Work;
- b. Verifying any data or information submitted to the United States;
- c. Conducting investigations relating to contamination at or near the Site;
- d. Obtaining samples
- e. Assessing the need for, planning, or implementing additional response actions at or near the Site;
- f. Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Settling Defendants or their agents; and
- g. Assessing Settling Defendants' compliance with this Consent Decree.

28. To the extent that the Site or any other property to which access is required for the implementation of this Consent Decree is owned or controlled by persons other than Settling Defendants, Settling Defendants shall use best efforts to secure from such persons access for Settling Defendants, as well as for the United States, the State and their representatives, including, but not limited to, EPA and its contractors, as necessary to effectuate this Consent Decree. Except for the purpose of obtaining access to property owned by Ralph C. Medley, or his successors or assigns, "best efforts" for purposes of this paragraph includes the payment of reasonable sums of money in consideration of access. If any access required to complete the Work is not obtained within 45 days of the date of entry of this Consent

Decree, or within 45 days of the date EPA notifies the Settling Defendants in writing that additional access beyond that previously secured is necessary, Settling Defendants shall promptly notify the United States, and shall include in that notification a summary of the steps Settling Defendants have taken to attempt to obtain access. The United States may, as it deems appropriate, assist Settling Defendants in obtaining access. Settling Defendants shall reimburse the United States, in accordance with the procedures set forth in Section XVII (Reimbursement of Response Costs), for all costs incurred by the United States in obtaining access, including, but not limited to, attorneys fees and any just compensation.

29. Notwithstanding any provision of this Consent Decree, the United States retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statute or regulations.

XI. REPORTING REQUIREMENTS

30. In addition to any other requirement of this Consent Decree, Settling Defendants shall submit to EPA one copy and to the State one copy of written monthly progress reports that: (a) describe the actions which have been taken toward achieving compliance with this Consent Decree during the previous month; (b) include a summary of all results of sampling and tests and all other data which have passed quality assurance/quality control requirements and which were received or generated by Settling Defendants or their contractors or agents in the

previous month; (c) identify all work plans, plans and other deliverables required by this Consent Decree to have been completed and submitted during the previous month; (d) describe all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next month and provide other information relating to the progress of construction, including, but not limited to, critical path diagrams, Gantt charts and Pert charts; (e) include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays; (f) include any modifications to the work plans or other schedules that Settling Defendants have proposed to EPA or that have been approved by EPA; and (g) describe all activities undertaken in support of the Community Relations Plan during the previous month and those to be undertaken in the next month. Settling Defendants shall submit these progress reports to EPA and the State by the 10th day of every month following the lodging of this Consent Decree until EPA notifies the Settling Defendants pursuant to Paragraph 48.b of Section XV (Certification of Completion). If requested by EPA, Settling Defendants shall also provide briefings for EPA to discuss the progress of the Work.

31. The Settling Defendants shall notify EPA of any change in the schedule described in the monthly progress reports for the performance of any activity, including, but not limited to, data

collection and implementation of work plans, no later than seven days prior to the performance of the activity.

32. a. Upon the occurrence of any event during performance of the Work that Settling Defendants are required to report pursuant to Section 103 of CERCLA or Section 304 of the Emergency Planning and Community Right-to-Know Act ("EPCRA"), Settling Defendants shall within 24 hours of the on-set of such event orally notify the EPA Project Coordinator or the Alternate EPA Project Coordinator (in the event of the unavailability of the EPA Project Coordinator), or, in the event that neither the EPA Project Coordinator or Alternate EPA Project Coordinator is available, the Emergency Response Section, Region IV, United States Environmental Protection Agency. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304.

b. Within 20 days of the onset of such an event, Settling Defendants shall furnish to Plaintiff a written report, signed by the Settling Defendants' Project Coordinator, setting forth the events which occurred and the measures taken, and to be taken, in response thereto. Within 30 days of the conclusion of such an event, Settling Defendants shall submit a report setting forth all actions taken in response thereto.

33. Settling Defendants shall submit to the Court, EPA and the State each year, within 30 days of the anniversary of the entry of the Consent Decree, a report setting forth the status of the Work, which shall at a minimum include a statement of major

milestones accomplished in the preceding year, a statement of tasks remaining to be accomplished, and a schedule for implementation of the remaining Work. Settling Defendants shall submit three copies of the report to EPA and three copies of the report to the State.

34. Settling Defendants shall submit the number of copies specified in the SOW of all plans, reports, and data required by the SOW, the Remedial Design Work Plan, the Remedial Action Work Plan, or any other approved plans to EPA in accordance with the schedules set forth in such plans. Settling Defendants shall simultaneously submit 3 copies of all such plans, reports and data to the State.

35. All reports and other documents submitted by Settling Defendants to EPA (other than the monthly progress reports referred to above) which purport to document Settling Defendants' compliance with the terms of this Consent Decree shall be signed by an authorized representative of the Settling Defendants.

XII. SUBMISSIONS REQUIRING AGENCY APPROVAL

36. After review of any plan, report or other item which is required to be submitted for approval pursuant to this Consent Decree, EPA, after reasonable opportunity for review and comment by the State, shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that the Settling Defendants modify the submission; or (e) any

combination of the above.

37. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Paragraph 36(a), (b) or (c), Settling Defendants shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA subject only to the Settling Defendants' right to invoke the Dispute Resolution procedures set forth in Section XX (Dispute Resolution) with respect to the modifications or conditions made by EPA. In the event that EPA modifies an initial submission to cure any deficiencies pursuant to Paragraph 36(c), EPA shall not seek stipulated penalties, except as provided in Paragraph 40 of this Consent Decree. If EPA modifies any technical provision of a design plan or specification and the Settling Defendants' Project Coordinator disagrees with such modification, the Settling Defendants shall have the right to document such disagreement with EPA in writing and EPA will then note in such design plan or specification that EPA has modified the document.

38. a. Upon receipt of a notice of disapproval and the reason for such disapproval pursuant to Paragraph 36(d), Settling Defendants shall, within 14 days or such other time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XXI, shall accrue during the 14-day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in

Paragraph 39.

b. Notwithstanding the receipt of notice of disapproval pursuant to Paragraph 36(d), Settling Defendants shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission shall not relieve Settling Defendants of any liability for stipulated penalties under Section XXI (Stipulated Penalties).

39. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA, EPA may again require the Settling Defendants to correct the deficiencies, in accordance with the preceding Paragraphs. EPA also retains the right to amend or develop the plan, report or other item. Settling Defendants shall implement any such plan, report, or item as amended or developed by EPA, subject only to their right to invoke procedures set forth in Section XX (Dispute Resolution).

40. If upon resubmission a plan, report, or item is disapproved or modified by EPA due to a material defect, Settling Defendants shall be deemed to have failed to submit such plan, report, or item timely and adequately unless the Settling Defendants invoke the dispute resolution procedures set forth in Section XX (Dispute Resolution) and EPA's action is overturned pursuant to that Section. The provisions of Section XX (Dispute Resolution) and Section XXI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any

stipulated penalties during Dispute Resolution. If EPA's disapproval, or modification of a resubmittal, is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XXI (Stipulated Penalties).

41. All plans, reports, and other items required to be submitted to EPA under this Consent Decree shall, upon approval or modification by EPA, be enforceable under this Consent Decree. In the event EPA approves or modifies a portion of a plan, report, or other item required to be submitted to EPA under this Consent Decree, the approved or modified portion shall be enforceable under this Consent Decree.

XIII. PROJECT COORDINATORS

42. Within 20 days of lodging this Consent Decree, Settling Defendants and EPA will notify each other, in writing, of the name, address and telephone number of their respective designated Project Coordinators and Alternate Project Coordinators. If a Project Coordinator or Alternate Project Coordinator initially designated is changed, the identity of the successor will be given to the other parties at least 5 working days before the changes occur, unless impracticable, but in no event later than the actual day the change is made. The Settling Defendants' Project Coordinator shall be subject to disapproval by EPA and shall have the technical expertise sufficient to adequately oversee all aspects of the Work. The Settling Defendants' Project Coordinator shall not be acting as an attorney for any of

the Settling Defendants in this matter. He or she may assign other representatives, including other contractors, to serve as a Site representative for oversight of performance of daily operations during remedial activities.

43. Plaintiff may designate other representatives, including, but not limited to, EPA employees, and federal contractors and consultants, to observe and monitor the progress of any activity undertaken pursuant to this Consent Decree. EPA's Project Coordinator and Alternate Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager ("RPM") by the National Contingency Plan, 40 C.F.R. Part 300. In addition, EPA's Project Coordinator or Alternate Project Coordinator shall have authority, consistent with the National Contingency Plan, to halt any Work required by this Consent Decree and to take any necessary response actions when s/he determines that conditions at the Site constitute an emergency situation or may present an immediate threat to public health or welfare or the environment due to release or threatened release of Waste Material.

44. EPA's Project Coordinator and the Settling Defendants' Project Coordinator will confer at a minimum on a monthly basis.

XIV. ASSURANCE OF ABILITY TO COMPLETE WORK

45. Within 30 days of entry of this Consent Decree, Settling Defendants shall establish and maintain financial security in the amount of \$3,000,000 in one of the following forms:

- (a) A surety bond guaranteeing performance of the Work;

- (b) One or more irrevocable letters of credit equalling the total estimated cost of the Work;
- (c) A trust fund;
- (d) A guarantee to perform the Work provided by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of the Settling Defendants; or
- (e) A demonstration that one or more of the Settling Defendants satisfy the requirements of 40 C.F.R. Part 264.143(f).

46. If the Settling Defendants seek to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 45(d) of this Consent Decree, Settling Defendants shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Settling Defendants seek to demonstrate their ability to complete the Work by means of the financial test or the corporate guaranty, they shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the effective date of this Consent Decree. In the event that EPA determines at any time that the financial assurances provided pursuant to this paragraph are inadequate, Settling Defendants shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 45

of this Consent Decree. Settling Defendants' inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Consent Decree.

XV. CERTIFICATION OF COMPLETION

47. Completion of the Remedial Action.

a. Within 90 days after Settling Defendants conclude that the Remedial Action has been fully performed and the Performance Standards have been attained, Settling Defendants shall so certify to the United States and shall schedule and conduct a pre-certification inspection to be attended by Settling Defendants and EPA. If, after the pre-certification inspection, the Settling Defendants still believe that the Remedial Action has been fully performed and the Performance Standards have been attained, they shall submit a written report to EPA for approval pursuant to Section XII (Submissions Requiring Agency Approval) within 30 days of the inspection. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator shall certify that the Remedial Action has been completed in accordance with the terms and conditions of this Consent Decree, the ROD and the SOW. The written report shall include as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

"I certify under penalty of law that this document and its attachments were prepared under my direction or supervision in

accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. I further certify under penalty of law, based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

If, after completion of the pre-certification inspection and receipt and review of the written report, EPA, after reasonable opportunity to review and comment by the State, determines that the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree or that the Performance Standards have not been achieved, EPA will notify Settling Defendants in writing of the activities that must be undertaken to complete the Remedial Action and achieve the Performance Standards. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Settling Defendants to submit a schedule to EPA for approval pursuant to Section XII (Submissions Requiring Agency Approval). Settling Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph, subject to their right to invoke the dispute resolution procedures set forth in Section XX (Dispute Resolution).

b. If EPA concludes, based on the initial or any subsequent request for Certification of Completion by Settling

Defendants and after a reasonable opportunity for review and comment by the State, that the Remedial Action has been fully performed in accordance with this Consent Decree and that the Performance Standards have been achieved, EPA will so certify in writing to Settling Defendants. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of this Consent Decree, including, but not limited to, Section XXII (Covenants Not to Sue by Plaintiff). Certification of Completion of the Remedial Action shall not affect Settling Defendants' obligations under this Consent Decree.

48. Completion of the Work -

a. Within 90 days after Settling Defendants conclude that all phases of the Work (including O & M), have been fully performed, Settling Defendants shall schedule and conduct a pre-certification inspection to be attended by Settling Defendants and EPA. If after the pre-certification inspection, the Settling Defendants still believe that the Work has been fully performed, Settling Defendants shall submit a written report (the "Remedy Completion Report") by a registered professional engineer stating that the Work has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

"I certify under penalty of law that this document and its attachments were prepared under my direction or

supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. I further certify under penalty of law, based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

If, after review of the written report, EPA, after reasonable opportunity for review and comment by the State, determines that any portion of the Work has not been completed in accordance with this Consent Decree, EPA will notify Settling Defendants in writing of the activities that must be undertaken to complete the Work. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Settling Defendants to submit a schedule to EPA for approval pursuant to Section XII (Submissions Requiring Agency Approval). Settling Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to their right to invoke the dispute resolution procedures set forth in Section XX (Dispute Resolution).

b. If EPA concludes, based on the initial or any subsequent request for Certification of Completion by Settling Defendants, and after a reasonable opportunity for review and comment by the State, that the Work has been fully performed in accordance with this Consent Decree, EPA will so notify the Settling Defendants in writing.

XVI. EMERGENCY RESPONSE

49. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of Waste Material from or at the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Settling Defendants shall, subject to Paragraph 50, immediately take all appropriate action to prevent, abate, or minimize such release or threat of release, and shall immediately notify EPA's Project Coordinator, or, if the Project Coordinator is unavailable, EPA's Alternate Project Coordinator. If neither of these persons is available, the Settling Defendants shall notify the EPA Emergency Response Unit, Region IV. Settling Defendants shall take such actions in consultation with EPA's Project Coordinator or other available authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW. In the event that Settling Defendants fail to take appropriate response action as required by this Section, and EPA takes such action instead, Settling Defendants shall reimburse EPA for all costs of the response action not inconsistent with the NCP, 40 C.F.R. Part 300, pursuant to Section XVII (Reimbursement of Response Costs).

50. Nothing in the preceding Paragraph or in this Consent Decree shall be deemed to limit any authority of the United States to take, direct, or order all appropriate action or to

seek an order from the Court to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site.

XVII. REIMBURSEMENT OF RESPONSE COSTS

51. Within 30 days of the effective date of this Consent Decree, Settling Defendants shall pay to the United States \$237,287.23, in the form of a certified or cashiers check or checks made payable to "EPA Hazardous Substance Superfund," and referencing the Medley Farm CERCLA Site and DOJ Case Number 90-11-3-104A in reimbursement of Past Response Costs. The Settling Defendants shall forward the check(s) to the United States Environmental Protection Agency, Region IV, ATTENTION: Superfund Accounting, P.O. Box 100142, Atlanta, Georgia 30384 and shall send copies of the check(s) to the United States as specified in Section XXVII (Notices and Submissions).

52. Settling Defendants shall reimburse the United States for all Future Response Costs not inconsistent with the National Contingency Plan incurred by the United States. From time to time, the United States will send Settling Defendants a bill(s) requiring payment that includes EPA's certified Agency Financial Management System summary data (SPUR Report) or such other summary or accounting as certified by EPA, which includes all direct and indirect costs incurred by EPA and DOJ and their contractors. Settling Defendants shall make all payments within 30 days of Settling Defendants' receipt of each bill requiring

payment, except as otherwise provided in Paragraph 53. The Settling Defendants shall make all payments required by this Paragraph in the manner described in Paragraph 51.

53. Settling Defendants may contest payment of any Future Response Costs under Paragraph 52 if they determine that the United States has made an accounting error or if they allege that a cost item that is included represents a cost that is inconsistent with the NCP. Such objection shall be made in writing within 30 days of receipt of the bill and must be sent to the United States pursuant to Section XXVII (Notices and Submissions). Any such objections shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, the Settling Defendants shall within the 30 day period pay all uncontested Future Response Costs in the manner described in Paragraph 51. The Settling Defendants shall send to the United States, as provided in Section XXVII (Notices and Submissions), a copy of the transmittal letter and check paying the uncontested Future Response Costs. Within such thirty day period, the Settling Defendants shall also initiate the Dispute Resolution procedures in Section XX (Dispute Resolution). If the United States prevails in the dispute, within 30 days of the resolution of the dispute, the Settling Defendants shall pay the funds (with accrued interest) to the United States in the manner described in Paragraph 51. If the Settling Defendants prevail concerning any aspect of the contested costs, the Settling Defendants shall pay

that portion of the costs (plus associated accrued interest) for which they did not prevail to the United States in the manner described in Paragraph 51. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XX (Dispute Resolution), shall be the exclusive mechanisms for resolving disputes regarding the Settling Defendants' obligation to reimburse the United States for its Future Response Costs.

54. In the event that the payments required by paragraph 51 are not made within 30 days of the effective date of this Consent Decree or the payments required by Paragraph 52 are not made within 30 days of the Settling Defendants' receipt of the bill, Settling Defendants' shall pay interest on the unpaid balance at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607. The interest on Past Response Costs shall begin to accrue 30 days after the effective date of the Consent Decree. The interest on Future Response Costs shall begin to accrue 30 days after the Settling Defendants' receipt of the bill. Payments made under this Paragraph shall be in addition to such other remedies or sanctions available to Plaintiff by virtue of Settling Defendants' failure to make timely payments under this Section.

XVIII. INDEMNIFICATION AND INSURANCE

55. The United States does not assume any liability by entering into this agreement or by virtue of any designation of Settling Defendants as EPA's authorized representatives under

Section 104(e) of CERCLA, 42 U.S.C. § 9604(e). Settling Defendants shall indemnify, save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree, including, but not limited to, any claims arising from any designation of Settling Defendants as EPA's authorized representatives under Section 104(e) of CERCLA. Further, the Settling Defendants agree to pay the United States all costs it incurs including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree. The United States shall not be held out as a party to any contract entered into by or on behalf of Settling Defendants in carrying out activities pursuant to this Consent Decree. Neither the Settling Defendants nor any contractor shall be considered to be an agent of the United States. The Settling Defendants shall not be liable to the United States for indemnification pursuant to this Paragraph for

any injuries or damages to persons or property resulting solely from any acts or omissions of employees of the United States or its contractors, subcontractors, or any persons acting on their behalf in carrying out any activities pursuant to this Consent Decree.

56. Settling Defendants waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Settling Defendants shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of the Settling Defendants and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

57. No later than 15 days before commencing any on-site Work, Settling Defendants shall secure, and shall maintain until the first anniversary of EPA's Certification of Completion of the Remedial Action pursuant to Paragraph 48.b of Section XV (Certification of Completion) comprehensive general liability and automobile insurance with limits of \$2,000,000, combined single limit naming as insured the United States. In addition, for the

duration of this Consent Decree, Settling Defendants shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Settling Defendants in furtherance of this Consent Decree. Prior to commencement of the Work under this Consent Decree, Settling Defendants shall provide to EPA certificates of such insurance and a copy of each insurance policy. Settling Defendants shall resubmit such certificates and copies of such policies each year on the anniversary of the effective date of this Consent Decree. If Settling Defendants demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Settling Defendants need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

XIX. FORCE MAJEURE

58. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of the Settling Defendants or of any entity controlled by Settling Defendants, including, but not limited to, their contractors and subcontractors, that delays or prevents the performance of any obligation under this Consent Decree despite Settling Defendants' best efforts to fulfill the obligation. The requirements that

the Settling Defendants exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring; and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the Work or a failure to attain the Performance Standards.

59. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, the Settling Defendants shall notify orally EPA's Project Coordinator or, in his or her absence, EPA's Alternate Project coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Waste Management Division, EPA Region IV, or, in his or her absence, the EPA Response Center for Oil and Hazardous Material Spills at (404) 347-4062, within 48 hours of when Settling Defendants first knew or should have known that the event might cause delay. Within 5 working days thereafter, Settling Defendants shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; the Settling Defendants' rationale for attributing such delay to a force majeure event if

they intend to assert such a claim; and a statement as to whether, in the opinion of the Settling Defendants, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Settling Defendants shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure for that event. Failure to comply with the requirements set forth above shall preclude Settling Defendants from asserting any claim of force majeure for that event. Settling Defendants shall be deemed to have notice of any circumstance of which their contractors or subcontractors had or should have had notice.

60. If EPA agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any subsequent obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, EPA will notify the Settling Defendants in writing of its decision. If EPA agrees that the delay is attributable to a force majeure event, EPA will notify the Settling Defendants in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

61. If the Settling Defendants elect to invoke the dispute resolution procedures set forth in Section XX (Dispute Resolution), they shall do so no later than 15 days after receipt of EPA's notice. In any such proceeding, Settling Defendants shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Settling Defendants complied with the requirements of Paragraphs 58 and 59, above. If Settling Defendants carry this burden, the delay at issue shall be deemed not to be a violation by Settling Defendants of the affected obligation of this Consent Decree identified to EPA and the Court.

XX. DISPUTE RESOLUTION

62. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree and shall apply to all provisions of this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of the Settling Defendants that have not been disputed in accordance with this Section.

63. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of

informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed 20 days from the time the dispute arises, unless such period is modified by written agreement of the parties to the dispute. The dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute.

64. a. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA shall be considered binding unless, within 14 days after the conclusion of the informal negotiation period, Settling Defendants invoke the formal dispute resolution procedures of this Section by serving on the United States a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by the Settling Defendants. Settling Defendants' Statement of Position shall include a statement as to whether formal dispute resolution should proceed under Paragraph 65 or 66.

b. Within fourteen (14) days after receipt of Settling Defendants' Statement of Position, EPA will serve on Settling Defendants its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA. EPA's Statement of Position shall include a statement as to whether formal dispute resolution should proceed under Paragraph

65 or 66.

c. If there is disagreement between EPA and the Settling Defendants as to whether dispute resolution should proceed under Paragraph 65 or 66, the Parties shall follow the procedures set forth in the Paragraph determined by EPA to be applicable. However, if the Settling Defendants ultimately appeal to the Court to resolve the dispute, the Court shall determine which Paragraph is applicable in accordance with the standards of applicability set forth in Paragraphs 65 and 66.

65. Formal dispute resolution for disputes pertaining to the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation: (1) the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this Consent Decree; and (2) the adequacy of performance of response actions taken pursuant to this Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by Settling Defendants regarding the validity of the ROD or any of the ROD's provisions.

a. An administrative record of the dispute shall be maintained by EPA and shall contain all Statements of Position, including supporting documentation, submitted pursuant to this Paragraph. Where appropriate, EPA may allow submission of

supplemental Statements of Position by the Parties to the dispute, and any such decision to allow or disallow submission shall be subject to the dispute resolution provisions of this Consent Decree.

b. The Director of the Waste Management Division, EPA Region IV, will issue a final administrative decision resolving the dispute based on the administrative record described in Paragraph 65.a. This decision shall be binding upon the Settling Defendants subject only to the right to seek judicial review pursuant to Paragraphs 65.c and d.

c. Any administrative decision made by EPA pursuant to Paragraph 65.b shall be reviewable by this Court, provided that a notice of judicial appeal is filed by the Settling Defendants with the Court and served on all parties within 10 days of receipt of EPA's decision. The notice of judicial appeal shall include a description of the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The United States may file a response to Settling Defendants' notice of judicial appeal.

d. In proceedings on any dispute governed by this Paragraph, Settling Defendants shall have the burden of demonstrating that the decision of the Waste Management Division Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be

on the administrative record compiled pursuant to Paragraph 65.a.

66. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any response action nor are otherwise accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

a. Following receipt of Settling Defendants' Statement of Position submitted pursuant to Paragraph 64, the Waste Management Division Director, EPA Region IV, will issue a final decision resolving the dispute. The Waste Management Division Director's decision shall be binding on the Settling Defendants unless, within 10 days of receipt of the decision, the Settling Defendants file with the Court and serve on all Parties a notice of judicial appeal setting forth the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States may file a response to Settling Defendants' notice of judicial appeal.

b. Notwithstanding Paragraph L of Section I (Background) of this Consent Decree, judicial review of any dispute governed by this Paragraph shall be governed by applicable provisions of law.

67. The invocation of formal dispute resolution procedures under this Section shall not of itself extend, postpone or affect in any way any obligation of the Settling Defendants under this

Consent Decree not directly in dispute unless EPA or the Court agrees otherwise. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Paragraph 75. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that the Settling Defendants do not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XXI (Stipulated Penalties) subject to the waiver provision of Paragraphs 69.a and 70.a.

XXI. STIPULATED PENALTIES

68. Settling Defendants shall be liable for stipulated penalties in the amounts set forth in Paragraphs 69 and 70 to the United States for failure to comply with the requirements of this Consent Decree specified below, unless excused under Section XIX (Force Majeure). "Compliance" by Settling Defendants shall include completion of the activities under this Consent Decree or any work plan or other plan approved under this Consent Decree identified below in accordance with all applicable requirements of law, this Consent Decree, the SOW, and any plans or other documents approved by EPA pursuant to this Consent Decree and within the specified time schedules established by and approved under this Consent Decree.

69. a. The following stipulated penalties shall be payable per violation per day to the United States for failure to submit

timely or adequate documents identified in Paragraph 69.b of this Consent Decree unless the penalties are waived at the sole discretion of EPA:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$2,000	1st through 14th days
\$3,000	15th through 45th days
\$4,000	46th day and thereafter

b. Documents

- i. The RD Work Plan
- ii. The Preliminary Design
- iii. The Prefinal/Final Design
- iv. The RA Work Plan
- v. The Operation and Maintenance Plan

70. a. The following stipulated penalties shall be payable per violation per day to the United States for failure to submit timely or adequate reports listed in Paragraph 70.b of this Consent Decree unless the penalties are waived at the sole discretion of EPA:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1,500	1st through 14th days
\$2,500	15th through 45th days
\$3,500	46th day and thereafter

b. Documents

- i. Field Sampling and Analysis Plan (FSAP)
- ii. Health and Safety Plan
- iii. Treatability Study Work Plan
- iv. Treatability Study Evaluation Report
- v. Project Delivery Strategy
- vi. Construction Management Plan
- vii. Construction Quality Assurance Project Plan
- viii. Construction Health and Safety Plan/Contingency Plan
- ix. Prefinal Inspection Report
- x. Remedial Action Report
- xi. Performance Standards Verification Plan

xii. Remedy Completion Report

c. Stipulated penalties in the amount of \$500 per violation per day shall be payable to the United States for failure to submit timely or adequate monthly progress reports pursuant to Section XI (Reporting Requirements).

71. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

72. Following EPA's determination that Settling Defendants have failed to comply with a requirement of this Consent Decree, EPA may give Settling Defendants written notification of the same and describe the noncompliance. EPA may send the Settling Defendants a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified the Settling Defendants of a violation.

73. All penalties owed to the United States under this section shall be due and payable within 30 days of the Settling Defendants' receipt from EPA of a demand for payment of the penalties, unless Settling Defendants invoke the Dispute Resolution procedures under Section XX (Dispute Resolution). All payments under this Section shall be paid by certified or cashiers check made payable to "EPA Hazardous Substances

Superfund," shall be mailed to Superfund Accounting, P.O. Box 100142, Atlanta, Georgia 30384 and shall reference CERCLA Number TJB04D673 and DOJ Case Number 90-11-3-104A. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to the United States as provided in Section XXVII (Notices and Submissions).

74. The payment of penalties shall not alter in any way Settling Defendants' obligation to complete the performance of the Work required under this Consent Decree.

75. Penalties shall continue to accrue as provided in Paragraph 71 during any dispute resolution period, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of EPA that is not appealed to this Court, accrued penalties shall be paid to EPA within 30 days of the agreement or the receipt of EPA's decision or order.

b. If the dispute is appealed to this Court and the United States prevails in whole or in part, Settling Defendants shall pay all accrued penalties determined by the Court to be owed to EPA within 60 days of receipt of the Court's decision or order, except as provided in Subparagraph C below;

c. If the District Court's decision is appealed by any of the Settling Defendants, Settling Defendants shall pay all accrued penalties determined by the District Court to be owing to the United States within 15 days of receipt of the final appellate court decision.

76. a. If Settling Defendants fail to pay stipulated penalties when due, the United States may institute proceedings to collect the penalties, as well as interest. Settling Defendants shall pay interest on the unpaid balance which shall begin to accrue on the date of demand made pursuant to Paragraph 73 at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607.

b. Nothing in this Section shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of Settling Defendants' violation of this Decree or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(1) of CERCLA, 42 U.S.C. § 9622(1).

77. Settling Defendants agree that no payments made under this Section shall be tax deductible for Federal tax purposes.

XXII. COVENANTS NOT TO SUE BY PLAINTIFF

78. In consideration of the actions that will be performed and the payments that will be made by the Settling Defendants under the terms of this Consent Decree, and except as specifically provided in Paragraphs 79, 80 and 82 of this Section, the United States covenants not to sue or to take administrative action against Settling Defendants pursuant to Sections 106 and 107(a) of CERCLA and Section 7003 of RCRA relating to the Site. Except with respect to future liability, these covenants not to sue shall take effect upon the receipt by EPA of the payments

required by Paragraph 51 of Section XVII (Reimbursement of Response Costs). With respect to future liability, these covenants not to sue shall take effect upon Certification of Completion of Remedial Action by EPA pursuant to Paragraph 48.b of Section XV (Certification of Completion). These covenants not to sue are conditioned upon the complete and satisfactory performance by Settling Defendants of their obligations under this Consent Decree. These covenants not to sue extend only to the Settling Defendants and do not extend to any other person.

79. United States' Pre-certification reservations.

Notwithstanding any other provisions of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants (1) to perform further response actions relating to the Site; or (2) to reimburse the United States for additional costs of response if, prior to certification of completion of the Remedial Action:

(1) conditions at the Site, previously unknown to the United States are discovered, or

(2) information is received, in whole or in part, after the entry of this Consent Decree,

and these previously unknown conditions or this information, together with any other relevant information, indicate that the Remedial Action is not protective of human health or the environment.

80. United States' Post-certification reservations.

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants (1) to perform further response action relating to the Site; or (2) to reimburse the United States for additional costs of response if, subsequent to certification of completion of the Remedial Action:

- (i) conditions at the Site, previously unknown to the United States, are discovered after the Certification of Completion, or
 - (ii) information is received, in whole or in part, after the Certification of Completion,
- and these previously unknown conditions or this information indicate that the Remedial Action is not protective of human health or the environment.

81. For purposes of Paragraph 79, the information previously received by and the conditions known to the United State shall include only that information and those conditions set forth in the Record of Decision and the administrative record supporting the Record of Decision. For purposes of Paragraph 80, the information previously received by and the conditions known to EPA shall include only that information and those conditions set forth in the Record of Decision, the administrative record supporting the Record of Decision, and any information received

by EPA pursuant to the requirements of this Consent Decree prior to Certification of Completion of the Remedial Action.

82. General reservations of rights. The covenants not to sue set forth above do not pertain to any matters other than those expressly specified in Paragraph 78. The United States reserves, and this Consent Decree is without prejudice to, all rights against Settling Defendants with respect to all other matters, including but not limited to, the following:

- (1) claims based on any failure by Settling Defendants to meet any requirement of this Consent Decree;
- (2) liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site;
- (3) liability for damages for injury to, destruction of, or loss of natural resources;
- (4) liability for response costs that have been or may be incurred by any federal agencies which are trustees for natural resources and which have spent, or may in the future spend, funds relating to the Site;
- (5) criminal liability;
- (6) liability for violations of federal or state law that occur during or after implementation of the Remedial Action; and
- (7) liability for costs which the United States will incur related to the Site but which are not within the definition of Future Response Costs.

83. In the event EPA determines that Settling Defendants have failed to implement any provisions of the Work in an adequate or timely manner, EPA may perform any and all portions of the Work as EPA determines necessary. Settling Defendants may invoke the procedures set forth in Section XX (Dispute Resolution) to dispute EPA's determination that the Settling Defendants failed to implement a provision of the Work in an adequate or timely manner as arbitrary and capricious or otherwise not in accordance with law. Such dispute shall be resolved on the administrative record. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Settling Defendants shall pay pursuant to Section XVII (Reimbursement of Response Costs).

84. Notwithstanding any other provision of this Consent Decree, the United States retains all authority and reserves all rights to take any and all response actions authorized by law.

XXIII. COVENANTS BY SETTLING DEFENDANTS

85. Settling Defendants hereby covenant not to sue and agree not to assert any claims or causes of action against the United States with respect to the Site or this Consent Decree, including, but not limited to, any direct or indirect claims for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 111, 112, or 113 or any other provision of law, any claim against any department, agency or instrumentality of the United States related to the Site, or any

claims arising out of response activities at the Site. However, the Settling Defendants reserve, and this Consent Decree is without prejudice to, actions against the United States based on negligent actions taken directly by the United States (not including oversight or approval of the Settling Defendants' plans or activities) that are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA. Nothing in this Consent Decree shall be deemed to constitute pre-authorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXIV. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

86. Nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a party to this Consent Decree. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this Consent Decree may have under applicable law. Each of the Parties expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a party hereto.

87. With regard to claims for contribution against Settling Defendants for matters addressed in this Consent Decree, the Parties hereto agree that the Settling Defendants are entitled,

to such protection from contribution actions or claims as is provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2).

88. The Settling Defendants agree that with respect to any suit or claim for contribution brought by them for matters related to this Consent Decree they will notify the United States in writing no later than 60 days prior to the initiation of such suit or claim.

89. The Settling Defendants also agree that with respect to any suit or claim for contribution brought against them for matters related to this Consent Decree, they will notify in writing the United States within 10 days of service of the complaint on them. In addition, Settling Defendants shall notify the United States within 10 days of service or receipt of any Motion for Summary Judgment and within 10 days of receipt of any order from a court setting a case for trial.

90. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Settling Defendants shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claimsplitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XXII (Covenants Not to

Sue by Plaintiff).

XXV. ACCESS TO INFORMATION

91. Settling Defendants shall provide to EPA, upon request, copies of all documents and information within their possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Consent Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Settling Defendants shall also make available to EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

92. a. Settling Defendants may assert business confidentiality claims covering part or all of the documents or information submitted to Plaintiff under this Consent Decree to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7) of CERCLA, and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified Settling Defendants that the documents or information are not confidential under the standard of Section 104(e)(7) of CERCLA, the public may be given access to such documents or

information without further notice to Settling Defendants.

b. The Settling Defendants may assert that certain documents, records and other information are privileged under the attorney client privilege or any other privilege recognized by federal law. If the Settling Defendants assert such a privilege in lieu of providing documents, they shall provide the Plaintiff with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information; and (6) the privilege asserted by Settling Defendants. However, no documents, reports or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on the grounds that they are privileged.

93. No claim of confidentiality shall be made with the respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

XXVI. RETENTION OF RECORDS

94. Until 6 years after the Settling Defendants' receipt of EPA's notification pursuant to Paragraph 48.b of Section XV (Certification of Completion), each Settling Defendant shall preserve and retain all records and documents in its possession

or control that relate in any manner to the performance of the Work or the liability of any person for response action conducted and to be conducted at the Site, regardless of any corporate retention policy to the contrary. Until 6 years after the Settling Defendants' receipt of EPA's notification pursuant to Paragraph 48.b Section XV (Certification of Completion), Settling Defendants shall also instruct their contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to the performance of the Work.

95. At the conclusion of this document retention period, Settling Defendants shall notify the United States at least 90 days prior to the destruction of any such records or documents, and, upon request by the United States, Settling Defendants shall deliver any such records or documents to EPA. The Settling Defendants may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Settling Defendants assert such a privilege, they shall provide the plaintiff with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Settling Defendants. However, no document, reports or other

information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

96. Each Settling Defendant hereby certifies, individually, that it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information relating to its potential liability regarding the Site since notification of potential liability by the United States or the State or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA and Section 3004 of RCRA.

XXVII. NOTICES AND SUBMISSIONS

97. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other parties in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Consent Decree with respect to the United States, EPA, and the Settling Defendants, respectively.

As to EPA:

Director, Waste Management Division
United States Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

and

Ralph Howard
EPA Project Coordinator
United States Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

As to the State:

Richard Haynes
Project Manager
Division of Site Engineering and Screening
S.C. Department of Health and Environmental Control
2600 Bull Street
Columbia, S.C. 29201

As to the Settling Defendants:

Settling Defendants' Project Coordinator:

David G. Nichols, P.G.
RMT, Inc.
100 Verdae Blvd.
P.O. Box 16778
Greenville, S.C. 29606

Any legal notices shall also be provided to the following counsel:

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044
Re: DJ # 90-11-3-104A

and

Elaine G. Levine, Esq.
Office of Regional Counsel
United States Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

As to the Settling Defendants:

Mary Jane Norville, Esq.
King & Spalding
191 Peachtree Street
Atlanta, GA 30303

XXVIII. EFFECTIVE DATE

98. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court, except as otherwise provided herein.

XXIX. RETENTION OF JURISDICTION

99. This Court retains jurisdiction over both the subject matter of this Consent Decree and the Settling Defendants for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XX (Dispute resolution) hereof.

XXX. APPENDICES

100. The following appendices are attached to and incorporated into this Consent Decree:

"Appendix A" is the ROD.

"Appendix B" is the SOW.

"Appendix C" is the description of the Site.

"Appendix D" is the complete list of the Settling Defendants.

XXXI. COMMUNITY RELATIONS

101. Settling Defendants shall propose to EPA the level at which they choose to participate in the community relations plan to be developed by EPA. EPA will determine the appropriate role for the Settling Defendants under the Plan. Settling Defendants shall also cooperate with EPA in providing information regarding the Work to the public. As requested by EPA, Settling Defendants shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the Site.

XXXII. MODIFICATION

102. Schedules specified in this Consent Decree for completion of the Work may be modified by agreement of EPA and the Settling Defendants. All such modifications shall be made in writing.

103. No material modifications shall be made to the SOW without written notification to and written approval of the United States, Settling Defendants, and the Court. Prior to providing its approval to any modification, the United States will provide the State with a reasonable opportunity to review and comment on the proposed modification. A copy of any such modifications shall be filed with the Court. Modifications to

the SOW, the Remedial Design Work Plan, and the Remedial Action Work Plan that do not materially alter those documents may be made by written agreement between EPA, after providing the State with a reasonable opportunity to review and comment on the proposed modification, and the Settling Defendants.

104. Nothing in this Consent Decree shall be deemed to alter the Court's power to enforce, supervise or approve modifications to this Consent Decree.

XXXIII. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

105. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) days for public notice and comment in accordance with section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper, or inadequate. Settling Defendants consent to the entry of this Consent Decree without further notice.

106. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXXIV. SIGNATORIES/SERVICE

107. Each undersigned representative of a Settling Defendant to this Consent Decree and the Assistant Attorney

General for Environment and Natural Resources of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such party to this document.

108. Each Settling Defendant hereby agrees not to oppose entry of this Consent Decree unless the United States has notified the Settling Defendants in writing that it no longer supports entry of the Consent Decree.

109. Each Settling Defendant shall identify, on the attached signature page, the name and address of an agent who is authorized to accept service of process by mail on behalf of that party with respect to all matters arising under or relating to this Consent Decree. Settling Defendants hereby agree to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

SO ORDERED THIS _____ DAY OF _____, 1991.

United States District Judge

APPENDIX B
MEDLEY FARM SOW REQUIREMENTS
FOR THE REMEDIAL ACTION WORK PLAN

2. Complete Plans and Specifications

A complete set of construction drawings and specifications shall be submitted at the Prefinal stage which describe the selected design. The final submittal shall include a complete set of construction drawings and specifications as well as a set of one-half size reductions of the drawings.

- 3. Final Construction Schedule

4. Construction Cost Estimate

A construction cost estimate based on sound, routine, generally accepted engineering practice shall be submitted.

TASK III - REMEDIAL ACTION

Remedial Action shall be performed in accordance with the terms of the Consent Decree to implement the response actions selected in the ROD. The Remedial Action shall consist of all activities necessary to implement the response actions selected in the ROD prior to operation and maintenance and long-term performance monitoring activities.

A. Remedial Action Planning

Concurrent with the submittal of the Prefinal Design, the Settling Defendants shall submit the following:

- RA Work Plan,
- Construction Management Plan,
- Construction Quality Assurance Plan, and
- Construction Health and Safety Plan/Contingency Plan.

The RA Work Plan, Construction Management Plan, and Construction Quality Assurance Plan must be reviewed and approved and the Construction Health and Safety Plan/Contingency Plan reviewed by EPA prior to the initiation of the Remedial Action.

Upon approval of the RA Work Plan and the Final Design, the Settling Defendants shall implement the RA Work Plan in accordance with the construction management schedule. Significant "field" changes to the RA as set forth in the RA Work Plan and Final Design shall not be undertaken without the approval of EPA. The RA shall be documented in enough detail to produce "as-built" construction drawings certified by a Professional Engineer registered in the State of South Carolina after the RA is complete. Implementation of the RA shall include EPA review and/or approval of required deliverables. The purpose of these reviews is for EPA to assess the

feasibility of the project to achieve the Site Objectives in accordance with the ROD and Consent Decree, including this SOW. Review and/or approval of submittals does not imply acceptance of later submittals that have not been reviewed, nor that the remedy, when constructed, will meet Performance Standards and be accepted.

1. RA Work Plan

A Work Plan which provides a detailed plan of action for completing the RA activities shall be submitted to EPA for review and approval. The objective of this work plan is to provide for the safe and efficient completion of the RA. The Work Plan shall include a comprehensive description of the work to be performed and a construction management schedule for completion of each major activity and submission of each deliverable. The Work Plan shall be developed in conjunction with the Construction Management Plan, the Construction Quality Assurance Plan, and the Construction Health and Safety Plan/Contingency Plan, although each plan may be delivered under separate cover.

Specifically, the Work Plan shall present the following:

a. A detailed description of the tasks to be performed and a description of the work products to be submitted to EPA. This includes the deliverables set forth in the remainder of Task III.

b. A schedule for completion of each required activity and submission of each deliverable required by this Consent Decree, including those in this SOW.

c. A project management plan, including monthly reports to EPA and meetings and presentations to EPA at the conclusion of each major phase of the RA.

d. A description of the community relations support activities to be conducted during the RA. At EPA's request, the Settling Defendants will assist EPA in preparing and disseminating information to the public regarding the RA work to be performed.

e. A description of Settling Defendants' strategy for conducting the project. This description shall focus on the management approach to carry out the design and implement the Remedial Action. Items to be addressed include procurement method and contracting strategy, phasing alternatives, and contractor and equipment availability concerns. If the construction of the selected remedy is to be accomplished by Settling Defendants' "in-house" resources, these resources shall be identified.

2. Construction Management Plan

A Construction Management Plan shall be developed to indicate how the construction activities are to be implemented and coordinated with EPA during the RA. The Settling Defendants shall designate a person to be a Remedial Action Coordinator and their representative on-site during the Remedial Action. This plan shall identify this representative along with other key project management personnel and lines of authority as well as provide descriptions of the duties of the key personnel along with an organizational chart. In addition, a plan for the administration of construction changes and EPA review and approval of those changes shall be included.

3. Construction Quality Assurance Project Plan

Settling Defendants shall develop and implement a Construction Quality Assurance Program to ensure, with a reasonable degree of certainty, that the completed remedial action meets or exceeds all design criteria, plans and specifications, and Site Objectives. The Construction Quality Assurance Plan shall incorporate relevant areas of the Performance Standards Verification Plan (see Task V). At a minimum, the Construction QA plan shall include the following elements:

a. A description of the quality control organization, including a chart showing lines of authority, identification of the members of the Independent Quality Assurance Team (IQAT), and acknowledgment that the IQAT will implement the control system for all aspects of the work specified and shall report to the project coordinator and EPA. The IQAT members shall be representatives from testing and inspection organizations and the Supervising Contractor and shall be responsible for the QA/QC of the RA. The members of the IQAT shall have a good professional and ethical reputation, previous experience in the type of QA/QC activities to be implemented, and demonstrated capability to perform the required activities. They shall also be independent of the construction contractor.

b. The name, qualifications, duties, authorities, and responsibilities of each person assigned a QC function.

c. Documentation of the observations and control testing that will be used to monitor the construction and/or installation of the components of the remedial action. This includes information which certifies that personnel and laboratories performing the tests are qualified and the equipment and procedures to be used complies with applicable standards. Any laboratories to be used shall be specified. Acceptance/Rejection criteria and plans for implementing corrective measures shall be addressed.

d. A schedule for managing submittals, testing, inspections, and any other QA function (including those of contractors, subcontractors, fabricators, suppliers, purchasing agents, etc.) that involves assuring quality workmanship, verifying compliance with the plans and specifications, or any other QC objectives. Inspections shall also verify compliance with all environmental requirements and include, but not be limited to, air quality and emissions monitoring records and waste disposal records, etc.

e. Reporting procedures and reporting format for QA/QC activities including such items as daily summary reports, schedule of data submissions, inspection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation.

f. A list of definable features of the work to be performed. A definable feature of work is a task which is separate and distinct from other tasks and has separate control requirements.

4. Construction Health and Safety Plan/Contingency Plan

A Construction Health and Safety Plan/Contingency Plan shall be prepared in conformance with the Settling Defendants' health and safety program, and in compliance with OSHA regulations and protocols. The Construction Health and Safety Plan shall include a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and site control. Note that EPA does not "approve" the Settling Defendants' Construction Health and Safety Plan/Contingency Plan, but rather EPA reviews it to ensure that all necessary elements are included, and that the plan provides for the protection of human health and the environment. This plan shall include a Contingency Plan and incorporate Air Monitoring and Spill Control and Countermeasures Plans, if applicable for the site. Air monitoring will be necessary at any site when the site specific risk assessment specifies a risk via the inhalation/air transport pathway. The Contingency Plan is to be written for the on-site construction workers and the local affected population. It shall include the following items:

a. Name of Person who will be responsible in the event of an emergency incident.

b. Plan for initial safety indoctrination and training for all employees, name of the person who will give the training and the topics to be covered.

c. Plan and date for meeting with the local community, including Local, State and Federal agencies involved in the

remediation, as well as the local emergency squads and the local hospitals.

d. A list of the first aid and medical facilities including: location of first aid kits, names of personnel trained in first aid, a clearly marked map with the route to the nearest medical facility, all necessary emergency phone numbers conspicuously posted at the job site (i.e., fire, rescue, local hazardous material teams, National Emergency Response Team, etc.)

e. Plans for protection of public and visitors to the job site.

f. Air Monitoring Plan which addresses the following factors:

1) Air monitoring shall be conducted both on site and at the perimeter of the site. The chemical constituents that were identified at the site as part of the Risk Assessment shall serve as a basis of the sampling for and measurement of pollutants in the atmosphere.

2) Air monitoring shall include personnel monitoring, on-site area monitoring, and perimeter monitoring.

a) Personnel Monitoring shall be conducted according to OSHA and NIOSH regulations and guidance.

b) On-site Area Monitoring shall consist of continuous real-time monitoring performed immediately adjacent to any waste excavation areas, treatment areas, and any other applicable areas when work is occurring. Measurements shall be taken in the breathing zones of personnel and immediately upwind and downwind to the work areas. Equipment may, as deemed appropriate, include the following: Organic Vapor Meter, Explosion Meter, Particulate Monitoring Equipment, and On-site Windssock.

c) Perimeter Monitoring shall consist of monitoring airborne contaminants at the perimeter of the site to determine whether harmful concentrations of toxic constituents are migrating off-site. EPA approved methods shall be used for sampling and analysis of air at the site perimeter. Perimeter samples shall be sampled and analyzed for the constituents of concern identified in the risk assessment. The results of the perimeter air monitoring and the on-site meteorological station shall be used to assess the potential for off-site population exposure to toxic materials. The air monitoring program shall include provisions for notifying nearby residents, Local, State and Federal agencies in the event that an emission of concentrations of airborne toxic constituents, which are

measured at consistently above-background levels, is migrating off-site.

g. A Spill Control and Countermeasures Plan which shall include the following:

1) Contingency measures for potential spills and discharges from materials handling and/or transportation.

2) A description of the methods, means, and facilities required to prevent contamination of soil, water, atmosphere, uncontaminated structures, equipment, or material by the discharge of wastes from spills due to operations.

3) A description of the equipment and personnel necessary to perform emergency measures required to contain any spillage and to remove spilled materials and soils or liquids that become contaminated due to spillage. This collected spill material must be properly disposed of.

4) A description of the equipment and personnel to perform decontamination measures that may be required to remove spillage from previously uncontaminated structures, equipment, or material.

B. Preconstruction Conference

A Preconstruction Conference shall be held after selection of the construction contractor but before initiation of construction. This conference shall include the Settling Defendants and Federal, State and Local government agencies and shall:

1. Define the roles, relationships, and responsibilities of all parties;

2. Review methods for documenting and reporting inspection data;

3. Review methods for distributing and storing documents and reports;

4. Review work area security and safety protocols;

5. Review the Construction Schedule.

6. Conduct a site reconnaissance to verify that the design criteria and the plans and specifications are understood and to review material and equipment storage locations.

The Preconstruction Conference must be documented, including names of people in attendance, issues discussed, clarifications

made, special instructions issued, etc.

C. Prefinal Inspection

Upon preliminary project completion the Settling Defendants shall notify EPA for the purpose of conducting a Prefinal Inspection. Participants shall include the Project Coordinators, Supervising Contractor, Construction Contractor, and other Federal, State, and local agencies with a jurisdictional interest. The Prefinal Inspection shall consist of a walk through inspection of the entire project site. The objective of the inspection is to determine whether the project is complete and consistent with the Consent Decree. Any outstanding construction items discovered during the inspection shall be identified and noted on a punch list. Additionally, treatment equipment shall be operationally tested by the Settling Defendants. The Settling Defendants shall certify that the equipment has performed to effectively meet the purpose and intent of the specifications. Retesting shall be completed where deficiencies are revealed. A Prefinal Inspection Report shall be submitted which outlines the outstanding construction items, actions required to resolve the items, completion date for the items, and an anticipated date for the Final Inspection.

D. Final Inspection

Upon completion of all outstanding construction items, the Settling Defendants shall notify EPA for the purposes of conducting a Final Inspection. The Final Inspection shall consist of a walk-through inspection of the entire project site. The Prefinal Inspection Report shall be used as a check list with the Final Inspection focusing on the outstanding construction items identified in the Prefinal Inspection. All tests that were originally unsatisfactory shall be conducted again. Confirmation shall be made during the Final Inspection that all outstanding items have been resolved. Any outstanding construction items discovered during the inspection still requiring correction shall be identified and noted on a punch list. If any items are still unresolved, the inspection shall be considered to be a Prefinal Inspection requiring another Prefinal Inspection Report and subsequent Final Inspection.

E. Remedial Action Report

Within thirty days after the Final Inspection, the Settling Defendants shall prepare and submit a Remedial Action Report which certifies that all items contained in the Consent Decree, including the ROD and this SOW and all incorporated documents (i.e., work plans, reports, plans and specifications, etc.) have been completed and that the remedy is functional and operating and has met the design plans and specifications.

Such report shall be certified by a Professional Engineer registered in the State of South Carolina. The RA Report shall include the following items:

1. Brief description of how outstanding items noted in the Prefinal Inspection were resolved;
2. Synopsis of the work defined in the SOW and certification that this work was performed;
3. Explanation of modifications made during the RA to the original RD and RA Work Plans and why these changes were made;
4. As-built and Record Drawings; and,
5. Documentation of how the Respondents are implementing the EPA-approved Operation and Maintenance Plan and Performance Standards Verification Plan.

After EPA review, Settling Defendants shall address any comments and, if determined by EPA to be necessary, submit a revised report. The Remedial Action shall not be considered complete until EPA approves the RA Report.

TASK IV - OPERATION AND MAINTENANCE

Operation and Maintenance (O&M) shall be performed for projects that produce facilities requiring operation and maintenance to support the response actions selected in the ROD. Operation and Maintenance shall be considered to begin on the date of the RA Report and shall be conducted until the Remedial Objectives and the Site Objectives are achieved in accordance with the ROD, this SOW, and Consent Decree.

A. Operation and Maintenance Plan

Concurrent with the submittal of the Prefinal (90 percent) Design, the Settling Defendants shall submit an Operation and Maintenance Plan for review. The Operation and Maintenance Plan shall be revised during the Remedial Action after identification of the specific equipment to be installed by the construction contractor and submitted for review by EPA prior to 50 percent completion of the Remedial Action and initiation of Operation and Maintenance activities.

Upon approval of the Operation and Maintenance Plan, the Settling Defendants shall implement the Operation and Maintenance Plan in accordance with the schedule contained therein. This plan shall describe start-up procedures, operation, troubleshooting, training, and evaluation activities

SUMMARY OF THE MAJOR DELIVERABLES FOR THE
REMEDIAL DESIGN AND REMEDIAL ACTION AT
THE MEDLEY FARM SITE

	<u>DELIVERABLE</u>	<u>EPA RESPONSE</u>
<u>TASK I</u>	<u>SCOPING</u>	
	Technical Memorandum Documenting Any Revised Site Objectives (5)	Review and Approve
	Field Sampling and Analysis Plan (12)	Review and Approve
	Health and Safety Plan (5)	Review and Comment
	Treatability Study Work Plan (12)	Review and Approve
	Treatability Study Evaluation Report (10)	Review and Approve
<u>TASK II</u>	<u>REMEDIAL DESIGN</u>	
	RD Work Plan (12)	Review and Approve
	Sampling and Analysis Plan (12)	Review and Approve
	Preliminary Design	
	Results of Data Acquisition Activities (12)	Review and Approve
	Design Criteria Report (12)	Review and Approve
	Preliminary Plans and Specifications (10)	Review and Approve
	Plan for Satisfying Permit Requirements (10)	Review and Approve
	Draft Construction Schedule (10)	Review and Comment
	Prefinal/Final Design	
	Complete Design Analyses (10)	Review and Approve
	Complete Plans and	Review and Approve

Specifications (10)

Final Construction Schedule (10) Review and Approve

Construction Cost Estimate (5) Review and Comment

TASK III REMEDIAL ACTION

RA Work Plan (12) Review and Approve

Project Delivery Strategy (10) Review and Approve

Construction Management Plan (10) Review and Approve

Construction Quality Assurance Plan (10) Review and Approve

Construction Health and Safety Plan/Contingency Plan (5) Review and Comment

Prefinal Inspection Report (5) Review and Comment

Remedial Action Report (10) Review and Approve

TASK IV OPERATION AND MAINTENANCE

Operation and Maintenance Plan (12) Review and Approve

TASK V PERFORMANCE MONITORING

Performance Standards Verification Plan (12) Review and Approve

Remedy Completion Report (12) Review and Approve

Note: The number in parenthesis indicates the number of copies to be submitted by Respondents. One copy shall be unbound, the remainder shall be bound.

APPENDIX C
SC DHEC APPLICATION FOR PERMIT
TO CONSTRUCT A WASTEWATER TREATMENT
OR COLLECTION SYSTEM

Application for Permit to Construct a Wastewater Treatment or Collection System

Bureau of Water Pollution Control
(Please Print or Type)

- I. Name of Project MEDLEY FARM NPL SITE County: CHEROKEE
- II. Location (street names, etc.): BURNT GIN ROAD, GAFFNEY, SOUTH CAROLINA ON PROPERTY
CURRENTLY OWNED BY MR. RALPH MEDLEY
- III. In accordance with the provisions of South Carolina Code Ann. Section 48-1-50 (1976), as amended, I hereby make application, on behalf of the owner whose name appears below, for a permit to construct (describe):
MEDLEY FARM SITE STEERING COMMITTEE (MESSC)
MARY JANE NORVILLE, ESQUIRE - CHAIRPERSON MESSC
- IV. Owner's Name, Address, and Telephone Number: C/O KING & SPALDING LAW FIRM
191 PEACHTREE STREET, ATLANTA, GEORGIA 30303 (404) 572-3585
- V. Name, Address, and Telephone Number of organization responsible for operation and maintenance (if different from owner): RMT, INC. 100 VERDAE BOULEVARD, GREENVILLE, SC 29606
(803) 281-0030 ATTENTION: STEVE W. WEBB PROJECT MANAGER
- VI. Total flow of this project not to exceed: 220,000 GPD or MGD (circle one)
- VII. Is this part of a phased project? No ☒ Yes ☐ Phase of
Is this project a revision to a previously permitted project? No ☒ Yes ☐
Project name (if different from this project):
DHEC Construction Permit Number: Date Approved:
- VIII. Are standard specifications on file with DHEC? No ☒ Yes ☐ Date Approved:
Specifications approved under what name or for whom:
Are standard specifications on file but are not being used on this project? No ☒ Yes ☐
- IX. Type of wastewater involved with this project (Please check one):
GROUND WATER REMEDIATION PROJECT
A. Domestic ☐ B. Process (Industrial) ☒ C. Combined (Domestic and Process) ☐
- X. Complete Section A (Collection System) and/or B (Wastewater Treatment Plant) and/or C (Effluent/Sludge Disposal only):
- A. 1) Name of facility treating the wastewater: MEDLEY FARM NPL SITE
2) NPDES or ND Number of facility in Item #1: SC 0046469
- B. 1) Date of the Preliminary Engineering Report (PER) approval: DECEMBER 29, 1992
2) Has an NPDES or ND application been submitted? No ☐ Yes ☒ Date Submitted: NOV 1992
- C. 1) Effluent Disposal Site (Description): JONES CREEK ABOVE THICKETT CREEK
2) Sludge Disposal Site (Description): NA
- Y. of Submittal: Complete Section A (Standard) or B (Delegated Review Program - DRP) and check each item submitted:
Standard Submittal Package must include the following, where applicable:
1. Application Fee for a sanitary sewer collection system: \$250 ☐ \$600 (Treatment Systems) ☐
2. A transmittal letter outlining the submittal package.
3. The original application for permit to construct, properly completed, with two (2) copies.
4. Three (3) copies of the stamped plans and specifications (omit specifications if you are using approved standard specifications).
5. Three (3) copies of the appropriate design calculations including flow and pump station calculations, pump curve, etc. The flow calculations should be based on DHEC "Guidelines for Unit Contributory Loadings to Wastewater Treatment Facilities" dated 1990.

- ☒ 6. Three (3) copies of a detailed 8 1/2" x 11" location map, separate from the plans.
- ☐ 7. Three (3) copies of construction easements unless the project owner has the right of eminent domain.
- ☐ 8. One (1) copy of an overall layout of the wastewater system separate from the plans that shows the proposed sewer lines (highlighted for identification) and their sizes and includes existing streets and sewer lines.
- ☐ 9. A letter of acceptance from the entity providing treatment of the wastewater that includes the specific number of lots and flow being accepted.
- ☐ 10. A letter from the organization agreeing to be responsible for the operation and maintenance of the proposed sanitary sewer collection system.

Note: Approval will be required from the designated Council of Governments (208 Plan certification), or from DHEC on the non-designated areas, the S.C. Coastal Council (Coastal areas), and the S.C. Water Resources Commission (for pipes crossing streams), before the project will be issued a construction permit.

B. Delegated Review Program (DRP) Submittal Package must include the following to be submitted by the delegated entity:

- ☐ 1. Application Fee for a sanitary sewer collection system submitted as a DRP project \$75 ☐
- ☐ 2. A transmittal letter noting this is a DRP submittal.
- ☐ 3. The original application for permit to construct, properly completed, with one (1) copy.
- ☐ 4. Two (2) copies of the stamped plans and specifications (omit specifications if you are using approved standard specifications).
- ☐ 5. Two (2) copies of the appropriate design calculations including flow and pump station calculations, pump curve, etc. The flow calculations should be based on DHEC "Guidelines for Unit Contributory Loadings to Wastewater Treatment Facilities" dated 1990.
- ☐ 6. Two (2) copies of a detailed 8 1/2" x 11" location map, separate from the plans.
- ☐ 7. Two (2) copies of construction easements unless the project owner has the right of eminent domain.
- ☐ 8. One (1) copy of an overall layout of the wastewater system separate from the plans that shows the proposed sewer lines (highlighted for identification) and their sizes and includes existing streets and sewer lines.
- ☐ 9. A letter of acceptance from the entity providing treatment of the wastewater that includes the specific number of lots and flow being accepted.
- ☐ 10. A letter from the organization agreeing to be responsible for the operation and maintenance of the proposed sanitary sewer collection system.
- ☐ 11. The 208 Plan certification from the appropriate Council of Governments (designated 208 areas), or from DHEC on the non-designated areas.
- ☐ 12. The S.C. Coastal Council certification (Coastal areas).
- ☐ 13. A S.C. Water Resources certification for crossings of navigable waterbodies and/or any other related Agency approval letters.
- ☐ 14. The delegated entity should indicate that a copy of the final approved plans are being returned to the appropriate design engineer.

XII. Copies of the construction plans, the material and construction specifications, the engineering calculations, and the 8 1/2" x 11" detailed location map, are herewith submitted and made a part of this application. I have placed my signature and seal on the engineering documents submitted, signifying that I accept responsibility for the design of this system, and that I have submitted a complete administrative package.

Engineer's Name (Printed): JERRY L. MC GRANER

Signature: [Signature]

S.C. Registration No.: 12,474

XIII. Prior to final approval, I will submit a statement certifying that construction is complete and in accordance with approved plans and specifications, to the best of my knowledge, information and belief. This certification will be based upon periodic observations of construction and a final inspection for design compliance by me or a representative of this office who is under my supervision.

Engineer's Name (Printed): JERRY L. MC GRANER

Signature: [Signature]

S.C. Registration No.: 12,474

XIV. I have read this application and agree to the requirements and conditions that are contained in it. Also, I agree to the admission of properly authorized persons at all reasonable hours for the purpose of sampling and inspection.

Owner's Name (Printed): MARY JANE NORVILLE, ESQUIRE

Signature: [Signature]

Owner's Title: CHAIRPERSON - MEDLEY FARM SITE

Date: [Blank]

STEERING COMMITTEE

*** See Attached Sheet for Instructions on Completing this Application ***

APPENDIX D
NPDES PERMIT NO. SC0046469
FOR MEDLEY FARM NPL SITE



Water Pollution Control PERMIT

TO DISCHARGE WASTEWATER IN ACCORDANCE WITH THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

THIS CERTIFIES THAT

Medley Farms NPL Site

has been granted permission to discharge wastewater from a facility located at

**Gaffney, Cherokee County
South Carolina.**

to receiving waters named

Jones Creek

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof. This permit is issued in accordance with the provisions of the Pollution Control Act of South Carolina (S.C. Code Sections 48-1-10 et seq., 1976) and with the provisions of the Federal Clean Water Act (PL 92-500), as amended, 33 U.S.C. 1251 et seq., the "Act."

Marion F. Sadler, Jr.

**DIRECTOR, DIVISION OF INDUSTRIAL & AGRICULTURAL WASTEWATER
BUREAU OF WATER POLLUTION CONTROL**

Issued:

Expires:

Effective:

Permit No.: SC0046469

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall(s) serial number 001: treated groundwater

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	kg/day (lbs/day)		Other Units (Specify)		Measurement * Frequency	Sample Type
	Monthly Average	Daily Max.	Monthly Average	Daily Max.		
Flow-m3/day (MGD)	-	-	MR	MR	Continuous	Recording flowmeter
1,2-Dichloroethane	-	-	MR	0.028 mg/l	Weekly	Grab
1,1-Dichloroethene	-	-	MR	0.039 mg/l	Weekly	Grab
Tetrachloroethene	-	-	MR	0.072 mg/l	Weekly	Grab
Trichloroethene	-	-	MR	0.028 mg/l	Weekly	Grab
BOD ₅	-	-	10 mg/l	20 mg/l	2/Month	Grab

MR = Monitor and Report Results.

* = See Part III, Section 12

- The pH shall not be less than 6.0 standard units nor greater than 8.5 standard units and shall be monitored twice per week by grab sample.
- There shall be no discharge of floating solids or visible foam in other than trace amounts; nor, shall the effluent cause a visible sheen on the receiving waters.
- Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): following treatment but prior to mixing with other waste streams on the receiving water.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

5. During the period beginning on the effective date of this permit and lasting until the permittee is notified in writing by the department that frequency of analysis has been changed, the permittee is authorized to discharge from outfall 001: treated groundwater.

EFFLUENT CHARACTERISTICS

DISCHARGE LIMITATIONS

MONITORING REQUIREMENTS

(lbs/day)		Other Units (Specify)	
Monthly Average	Daily Maximum	Monthly Average	Daily Maximum

Measurement Frequency	Sample Type
--------------------------	----------------

Whole Effluent Chronic Toxicity
Pass/Fail using 75% effluent

0

1/month

Grab

6. Samples taken in compliance with the monitoring requirements specified above shall be taken at or near the outfall, but prior to mixing with the receiving stream.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

7. During the period beginning when the permittee is notified in writing by the department that frequency of analysis has been changed and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall 001: treated groundwater.

EFFLUENT CHARACTERISTICS

DISCHARGE LIMITATIONS

MONITORING REQUIREMENTS

(lbs/day)		Other Units (Specify)	
Monthly Average	Daily Maximum	Monthly Average	Daily Maximum

Measurement
Frequency

Sample
Type

Whole Effluent Chronic Toxicity
Pass/Fail using 75% effluent

- - - 0

1/quarter

Grab

8. Samples taken in compliance with the monitoring requirements specified above shall be taken at or near the outfall, but prior to mixing with the receiving stream.

- (2) A combination of not less than 8 influent or effluent grab samples collected at regular (equal) intervals over a specified period of time, properly preserved, (See part I.C.4.) and composited by increasing the volume of each aliquot in proportion to flow. If continuous flow measurement is not used to composite in proportion to flow, the following method will be used: Take an instantaneous flow measurement each time a grab sample is collected. At the end of the sampling period, sum the instantaneous flow measurements to obtain a total flow to determine the partial amount (percentage) of each grab sample to be combined to obtain the composite sample.
- (3) A combination of not less than 8 influent or effluent grab samples of equal volume but at variable time intervals that are inversely proportional to the volume of the flow. That is, the time interval between aliquots is reduced as the volume of flow increases.
- (4) A combination of not less than 8 influent or effluent grab samples of constant (equal) volume collected at regular (equal) time intervals over a specified period of time, while being properly preserved.

Continuous flow or the sum of instantaneous flows measured and averaged for the specified compositing time period shall be used with composite sample results to calculate quantity.

9. Right of Entry

The permittee shall allow the Commissioner of the Department of Health and Environmental Control, the Regional Administrator of EPA, and/or their authorized representatives:

- a. To enter upon the permittee's premises where a regulated facility or activity and effluent source is located in which any records are required to be kept under the terms and conditions of this permit, and,
- b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit and sample or monitor any substances or parameters at any location of the purposes of assuring permit compliance.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit non-compliance constitutes a violation of the Act and the S.C. Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for the denial of a permit renewal application.

2. Civil and Criminal Liability

- a. Any person who violates a term, condition or schedule of compliance contained within this permit is subject to the actions defined by Sections 48-1-320 and 48-1-330 of the S.C. Pollution Control Act.
- b. Except as provided in permit conditions on "Bypassing" (Part II.C.2.), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for non-compliance.
- c. It shall not be an acceptable defense of the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- d. It is the responsibility of the permittee to have a treatment facility that will meet the final effluent limitations of this permit. The approval of plans and specifications by the Department does not relieve the permittee of responsibility for compliance.

3. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject to under Section 311 of the Act, the S.C. Pollution Control Act or applicable provisions of the S.C. Hazardous Waste Management Act and the S.C. Oil and Gas Act.

4. Permit Modification

- a. The permittee shall furnish to the Department within a reasonable time any relevant information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit.

- b. Upon sufficient cause, this permit may be modified, revoked, reissued, or terminated during its term, after public notice and opportunity for a hearing. Modifications deemed to be minor will not require public notice.
- c. The filing of a request by the permittee for a permit modification, or a notification of planned changes or anticipated non-compliance, does not stay any permit condition.

5. Toxic Pollutants

Notwithstanding Part II.A.4. above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitations for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and permittee so notified.

6. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

7. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

8. Severability

The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

9. Onshore and Offshore Construction

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

B. REPORTING REQUIREMENTS

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any planned facility expansions, production increases, or process modifications which will result in a new or different discharge of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Department of such changes. Following such notice, the permit may be modified to specify and limit any pollutant not previously limited.

2. Twenty-Four Hour Non-Compliance Reporting

- a. The permittee shall report any non-compliance with provisions specified in this permit which may endanger public health or the environment. The permittee shall notify the Department orally within 24 hours of becoming aware of such conditions. During normal working hours call 803/734-5300. After hour reporting should be made to the 24 hour Emergency Response telephone number 803/253-6488. The permittee shall provide the following information to the Department in writing, within five (5) days of becoming aware of such conditions:
 1. A description of the discharge and cause of non-compliance; and,
 2. The period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the non-complying discharge.
- b. The following violations shall be included in a 24 hour report when they might endanger health or the environment:
 1. An unanticipated bypass which exceeds any effluent limitation in this permit;
 2. Any upset which exceeds any effluent limitation in the permit.
- c. As soon as the permittee has knowledge of or anticipates the need for a bypass, but not later than 10 days before the date of the bypass, it shall notify the Department and provide a determination of the need for bypass as well as the anticipated quality, quantity, time of duration, and effect of the bypass.

3. Other Non-Compliance

The permittee shall report in narrative form, all instances of non-compliance not previously reported under Section B, Paragraph B.2., at the time Discharge Monitoring Reports are submitted. The reports shall contain the information listed in Paragraph B.2.a.

4. Transfer of Ownership or Control

A permit may be transferred to another party under the following conditions:

- a. The permittee notifies the Department of the proposed transfer at least thirty (30) days in advance of the proposed transfer date;
- b. A written agreement is submitted to the Department between the existing and new permittee containing a specific date for the transfer of permit responsibility, coverage, and liability for violations up to that date and thereafter.

Transfers are not effective if, within 30 days of receipt of proposal, the Department disagrees and notifies the current permittee and the new permittee of the intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed.

5. Expiration of Permit

The permittee is not authorized to discharge after the expiration date of this permit, unless a completed application for reissuance is submitted no later than 180 days prior to the expiration date. Permission may be granted to submit an application later than this, but not later than the expiration date of the permit. In accordance with Section 1-23-370 of the code of laws of South Carolina, if a timely and sufficient application is made for any activity of a continuing nature, the existing permit does not expire until a final determination is made to renew or deny renewal of the existing permit.

6. Signatory Requirements

All applications, reports or information submitted to the Department shall be signed and certified.

- a. All permit applications shall be signed as follows:
 1. For a corporation: by a principal executive officer of at least the level of vice-president or by a duly authorized representative;

2. For a partnership or sole proprietorship: by a general partner or proprietor, respectively; or,
 3. For a municipality, State, Federal or other public agency: by either a principal executive officer or ranking elected official.
- b. All reports required by the permit and other information requested by the Department shall be signed by a person described above or by duly authorized representation only if:
1. The authorization is made in writing by a person described above and submitted to the Department;
 2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

7. Availability of Reports

Except for data determined to be confidential under Section 48-1-270 of the S.C. Pollution Control Act, all reports prepared in accordance with the terms and conditions of this permit shall be available for public inspection at the offices of the Department and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 48-1-340 of the S.C. Pollution Control Act.

8. Changes in Discharges of Toxic Pollutants or Hazardous Substances

- a. The permittee shall notify the Department as soon as it knows or has reason to believe that any activity has occurred or will occur which would result in the discharge in any outfall of:
1. Any toxic pollutant(s) identified under Section 307(a) of the Act which exceed the highest of the following concentrations and are not limited in the permit.
 - 1 mg/l for antimony (Sb);
 - 0.500 mg/l for 2,4-dinitrophenol or 2-methyl, -4,6-dinitrophenol;
 - 0.200 mg/l for acrolein or acrylonitrile;
 - 0.100 mg/l for any other toxic pollutant; or,
 - Ten (10) times the maximum concentration value reported in the permit application.

2. Any hazardous substance(s) identified under Section 311 of the Act as determined by Federal Regulation 40 CFR-117.
- b. The permittee must notify the Department as soon as it knows or has reason to believe that it has begun or expects to begin to use or manufacture as an intermediate or final product or by-product any toxic pollutant or hazardous substance which was not reported in the permit application.

C. OPERATION AND MAINTENANCE

1. Facilities Operation

- a. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance based on design facility removals, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls as determined by the laboratory certification program of the Department. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit. Maintenance of facilities, which necessitates unavoidable interruption of operation and degradation of effluent quality shall be scheduled during non-critical water quality periods and carried out in a manner approved by the Department.
- b. The permittee shall provide for an operator, as certified by the South Carolina Board of Certification for Environmental Systems Operators, with a grade equal to or higher than the classification designated in Part III.A.3. The name and grade of the operator of record shall be submitted to the Department prior to placing the facility into operation. A roster of operators associated with the facility's operation and their certification grades shall also be submitted with the name of the "operator-in-charge". Any changes in operator or operators shall be submitted to the Department as they occur.

2. Bypassing

Any intentional diversion from or bypass of waste streams from any portion of wastewater collection and treatment facilities which is not a designed or established operating mode for the facility is prohibited except (a) where unavoidable to prevent loss of life, personal injury or severe property damage, or (b) where excessive storm drainage or run-off would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit and there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or retention of untreated wastes. "Severe property damage" does not mean economic loss caused by delays in production.

3. Duty to Mitigate, Halt or Reduce Activity

The permittee shall take all reasonable steps to prevent, minimize or correct any adverse impact on public health or the environment, resulting from non-compliance with this permit. Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with this permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided.

4. Power Failures

In order to maintain compliance with effluent limitations and prohibitions of this permit, the permittee shall either:

- a. In accordance with the Schedule of Compliance contained in Part I.B., provide an alternative power source sufficient to operate the wastewater control facilities;

or, if such alternative power source is not in existence, and no date for its implementation appears in Part I.B., have a plan of operation which will:

- b. Halt, reduce, or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

5. Removed Substances

Solids, sludges, filter backwash or other residuals removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent such materials from entering State waters and in accordance with guidelines issued pursuant to Section 405 of the Act, and the terms of a construction or NPDES and/or solid or hazardous waste permit issued by the Department.

PART III

A. OTHER REQUIREMENTS

1. The permittee shall maintain at the permitted facility a complete Operations and Maintenance Manual for the waste treatment plant. The manual shall be made available for on-site review during normal working hours. The manual shall contain operation and maintenance instructions for all equipment and appurtenances associated with the waste treatment plant. The manual shall contain a general description of the treatment process(es), operating characteristics that will produce maximum treatment efficiency and corrective action to be taken should operating difficulties be encountered.
2. The permittee shall provide for the performance of routine daily treatment plant inspections by a certified operator of the appropriate grade as defined in Part II.C.1. The inspection shall include, but is not limited to, areas which require a visual observation to determine efficient operations and for which immediate corrective measures can be taken using the O & M manual as a guide. All inspections shall be recorded and shall include the date, time and name of the person making the inspection, corrective measures taken, and routine equipment maintenance, repair, or replacement performed. The permittee shall maintain all records of inspections at the permitted facility as required by Part I.C.7., and the records shall be made available for on-site review during normal working hours. At the end of six (6) months, the permittee may make application to reopen this permit to reduce the frequency of inspections.
3. The wastewater treatment plant shall be assigned a classification in the Permit to Construct to be issued by the Department. Treatment systems must be completed and installed prior to beginning of discharge.
4. The permittee shall maintain an all weather access road to the wastewater treatment plant and appurtenances at all times.
5. The permittee shall monitor all parameters consistent with conditions established by this permit on the 2nd Monday of every calendar month, unless otherwise approved by this Department. Additional monitoring, as necessary to meet the frequency requirements of this permit (Part I.A. Effluent Limitations and Monitoring Requirements) shall be performed by the permittee.
6. Records for the calibration of the parshall flume shall be made available to Department personnel during normal working hours.
7. Disposal of all sludge and waste oils shall meet all requirements of SCDHEC's Bureau of Solid and Hazardous Waste Management.
8. The NPDES permit limitations are considered provisional until the appropriate basin-wide NPDES permitting activity has been completed. These limits are subject to change at that time.
9. The application for a Permit to Construct shall include plans and specification for an in-stream diffuser for the discharge of the effluent to Jones Creek. Such diffuser must be installed and ready for use prior to initiation of any discharge.

10. (a) Monthly pass/fail static-renewal 3-brood chronic Ceriodaphnia dubia toxicity tests shall be conducted on a solution of 72% effluent from Outfall 001 in accordance with the most recent Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 2nd ed. (EPA/600/4-89/001) and South Carolina Procedures for Pass/Fail Modifications of the Ceriodaphnia 48 hour Acute Toxicity Test and Ceriodaphnia Survival and Reproduction Test (SCDHEC, May 1989), or superseding documents. The raw data and results shall be submitted in accordance with Part I.C.3 of the permit for each monthly test. The test must be performed by a SCDHEC certified laboratory.
 - (b) The permittee may substitute definitive toxicity tests for pass/fail tests. Definitive tests shall be conducted in accordance with the most recent Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 2nd ed. (EPA/600/4-89/001) and the most recent draft or edition of Methods for Conducting Whole Effluent Toxicity Tests in South Carolina (SCDHEC).
 - (c) If pass/fail test data provide statistically significant evidence at the 0.05 α level that the proportion of test group organisms that die is higher than the proportion of control group organisms that die, or that mean reproduction in the test group is lower than mean reproduction in the control group, the test shall be deemed a failure.
 - (d) If the regression of definitive toxicity test data predicts greater than 20% mortality in 72% effluent, or a reduction in reproduction greater than 20% in 72% effluent, and the toxicity test data provide statistically significant evidence at 0.05 α level that the slope of the regression line is greater than 0, the test shall be deemed a failure.
 - (e) After passing 3 consecutive tests, the permittee may make a written request that the frequency of analysis for toxicity be reduced from monthly to quarterly. Page 3 of this permit shall expire, and page 4 shall become effective on the first day of the month after the Department informs the permittee in writing that frequency of analysis for toxicity has been changed to quarterly.
11. A 2C NPDES Application Form shall be completed and submitted to SC DHEC within 120 days of the initial discharge of treated groundwater. The permittee shall analyze for all parameters in Item V., Parts A, B, and C. Significant variation from anticipated levels of pollutants present may result in this permit being modified or revoked and reissued to incorporate additional parameters and limitations.
 12. At the end of six (6) months the permittee may make application to reopen this permit to reduce the monitoring frequency, as long as the wastewater treatment system has successfully operated and consistently met permit limits.

I. General Information

The wastewater from this project will be generated from the clean-up of contaminated groundwater from the Medley Farm Site in Cherokee County. The design of the remediation system is based on a maximum flow rate of 152.77 gpm (0.22 MGD). This treated water will be piped to Jones Creek for discharge. Jones Creek will be considered a FW (Freshwater) Class Stream.

Determination of Limitations

7Q10 of Jones Creek = 0.13 cfs (0.084 MGD)

Q_A of Jones Creek = 1.6 cfs (1.034 MGD)

Q_D (Effluent Discharge Flow) = 0.22 MGD

Dilution Factor for Aquatic Life (DF_1) =

$$\frac{7Q10 + Q_D}{Q_D} = \frac{0.084 + 0.22}{0.22} = 1.38$$

Dilution Factor for MCLs and Human Health (DF_2) =

$$\frac{Q_A + Q_D}{Q_D} = \frac{1.034 + 0.22}{0.22} = 5.7$$

Instream Waste Concentration for Aquatic Life (IWC_1) =

$$1/DF_1 \times 100 \% = 72.37 \%$$

Instream Waste Concentration for MCLs and Human Health (IWC_2) = $1/DF_2 \times 100$
% = 12.22%

Allowable Discharge = Acceptable Instream x Dilution
Concentration Concentration Factor

Discharge limitations are considered for those regulated pollutants found to be present in the groundwater. Limitations are based on EPA Water Quality Criteria for Aquatic Life (WQC) and Human Health (HH) consideration, whichever are more stringent. Where applicable, Drinking Water Maximum Contaminant Levels (MCLs) are used. In any instance where the State's lower limit of detection is below the limits, the applicable limitation will be stated as "less than (<)" the detection limit.

II. Permit Limitations :

A. Benzene

1. Sampling Results: 2.0 ug/l
2. Drinking Water MCLs: 5 ug/l
3. WQC (Aquatic Life): $(5,300 \text{ ug/l} + 100) \times DF_1(1.38) = 73.14 \text{ ug/l}$
4. WQC (Human Health): $5 \text{ ug/l} \times DF_2(5.7) = 28.5 \text{ ug/l}$
5. State Lower Limit of Detection: 2.0 ug/l
6. Conclusion: Due to effluent concentrations resulting in less than one-tenth the most stringent stream standards, there will be no limit for Benzene.

B. Chloroform

1. Sampling Results: 9 ug/l
2. Drinking Water MCLs: 100 ug/l
3. WQC (Aquatic Life): $(1240 + 10) \times DF_1(1.38) = 171.12$ ug/l
4. WQC (Human Health): $100 \text{ ug/l} \times DF_2(5.7) = 570.0$ ug/l
5. State Lower Limit of Detection: 2.0 ug/l
6. Conclusion: Due to effluent concentrations resulting in less than one-tenth the most stringent stream standards, there will be no limit for Chloroform.

C. 1,1-Dichloroethane

1. Sampling Results: 5 ug/l
2. Drinking Water MCLs: none
3. WQC (Aquatic Life): none
4. WQC (Human Health): none
5. State Lower Limit of Detection: 2.0 ug/l
6. Conclusion: In the absence of any State standards, and the low concentrations present, there will be no limit for 1,1-Dichloroethane.

D. 1,2-Dichloroethane

1. Sampling Results: 650 ug/l
2. Drinking Water MCLs: 5 ug/l
3. WQC (Aquatic Life): $(118,000 + 100) \times DF_1(1.38) = 1628.4$ ug/l
4. WQC (Human Health): $5 \text{ ug/l} \times DF_2(5.7) = 28.5$ ug/l
5. State Lower Limit of Detection: 5 ug/l
6. Conclusion: The limit for 1,2-Dichloroethane will be 28.5 ug/l, based on Water Quality Standards (Drinking Water MCL)

E. 1,1-Dichloroethene

1. Sampling Results: 400 ug/l
2. Drinking Water MCLs: 7 ug/l
3. WQC (Aquatic Life): $(11,600 + 100) \times DF_1(1.38) = 160.08$ ug/l
4. WQC (Human Health): $7 \text{ ug/l} \times DF_2(5.7) = 39.9$ ug/l
5. State Lower Limit of Detection: 5 ug/l
6. Conclusion: The limit for 1,1-Dichloroethene will be 39.9 ug/l, based on Water Quality Standards (Drinking Water MCL)

F. 1,2-trans-Dichloroethane

1. Sampling Results: 37 ug/l
2. Drinking Water MCLs: none
3. WQC (Aquatic Life): none
4. WQC (Human Health): none
5. State Lower Limit of Detection:
6. Conclusion: In the absence of any state standard and the low concentrations present, there will be no limit for 1,2-Dichloroethane.

G. Tetrachloroethene

1. Sampling Results: 560 ug/l
2. Drinking Water MCLs: 88.5 ug/l
3. WQC (Aquatic Life): $(5,280 + 100) \times DF_1(1.38) = 72.86$ ug/l
4. WQC (Human Health): $88.5 \times DF_2(5.7) = 504.45$ ug/l
5. State Lower Limit of Detection: 2 ug/l
6. Conclusion: The limit for Tetrachloroethene will be 72.8 ug/l based on Water Quality Criteria (Aquatic Life)

H. 1,1,1-Trichloroethane

1. Sampling Results: 61 ug/l
2. Drinking Water MCLs: 200 ug/l
3. WQC (Aquatic Life): none
4. WQC (Human Health): $200 \text{ ug/l} \times DF_2(5.7) = 1,140$ ug/l
5. State Lower Limit of Detection: 2 ug/l
6. Conclusion: Due to effluent concentrations resulting in less than one-tenth the most stringent stream standards, there will be no limit for 1,1,1-Trichloroethane.

I. Trichloroethene (TCE)

1. Sampling Results: 920 ug/l
2. Drinking Water MCLs: 5 ug/l
3. WQC (Aquatic Life): $(45,000 + 100) \times DF_1(1.38) = 621.0$ ug/l
4. WQC (Human Health): $5 \text{ ug/l} \times DF_2(5.7) = 28.5$ ug/l
5. State Lower Limit of Detection: 2 ug/l
6. Conclusion: The limit for Trichloroethene will be 28 ug/l based on Water Quality Criteria (Drinking Water MCL)

J. BOD₅

1. Sampling Results: <10 mg/l
Wasteload Allocation Section recommendations:
Daily Maximum: 20 mg/l
Monthly Average: 10 mg/l
2. Conclusion: Based on water quality considerations, BOD will be limited to 10 mg/l as monthly average and 20 mg/l as daily maximum.

K. pH

Regulation 61-68, Water Classifications and Standards, sets pH standard for Freshwaters between 6.0 and 8.5

SUMMARY OF LIMITS

<u>Pollutant</u>	<u>Proposed Limitation</u>
1,2-Dichloroethane	28.5 ug/l (0.028 mg/l)
1,1- Dichloroethene	39.9 ug/l (0.039 mg/l)
Tetrachloroethene	72.8 ug/l (0.072 mg/l)
Trichloroethene	28.5 ug/l (0.028 mg/l)
BOD ₅	10 mg/l (Monthly Average) 20 mg/l (Daily Maximum)
pH	6.0 to 8.5

- L. The Department's Toxic Control Strategy for Wastewater Discharges requires only chronic toxicity testing for IWC's between 10% and 80% when an instream diffuser instream diffuser is in place. Since the special conditions section of the permit calls for an instream diffuser to be installed, only chronic toxicity testing is being required.

If no failures occur during the year's screening process, a limitation for biological monitoring may be imposed and the frequency of testing may be reduced to once per quarter.

October 4, 1993

Mr. Steve Webb, Ph.D., P.E.
RMT, Inc.
P.O. Box 16778
Greenville, S.C. 29606-6778

RE: Draft NPDES Permit No. SC0046469
Medley Farms NPL Site
Cherokee County

Dear Mr. Webb:

This letter is in response to our telephone conversation on September 30, 1993 concerning the above referenced project. I have made the changes per our conversation and I am enclosing copies of the modified pages. The permit will now be put on public notice. This should take place around October 15, 1993.

If you have any questions please call me at (803) 734-4734.

Sincerely,

C.W. Swygert III
C. W. Swygert, III
Environmental Engineer Associate
Industrial and Agricultural
Wastewater Division

CWS/cws

cc: Appalachia III District
Mr. Ralph Howard, US EPA Region IV
Mr. Richard Haynes, BSHW

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

5. During the period beginning on the effective date of this permit and lasting until the permittee is notified in writing by the department that frequency of analysis has been changed, the permittee is authorized to discharge from outfall 001: treated groundwater.

EFFLUENT CHARACTERISTICS

DISCHARGE LIMITATIONS

MONITORING REQUIREMENTS

(lbs/day)
Monthly Daily Other Units (Specify)
Average Maximum Monthly Daily
 Average Maximum

Measurement Sample
Frequency Type

Whole Effluent Chronic Toxicity
Pass/Fail using 72% effluent

-

-

-

0

1/month

Grab

6. Samples taken in compliance with the monitoring requirements specified above shall be taken at or near the outfall, but prior to mixing with the receiving stream.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

7. During the period beginning when the permittee is notified in writing by the department that frequency of analysis has been changed and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall 001: treated groundwater.

EFFLUENT CHARACTERISTICS

DISCHARGE LIMITATIONS

MONITORING REQUIREMENTS

(lbs/day)
Monthly Daily Other Units (Specify)
Average Maximum Average Daily
Maximum

Measurement Sample
Frequency Type

Whole Effluent Chronic Toxicity
Pass/Fail using 72% effluent

- - - 0

1/quarter

Grab

8. Samples taken in compliance with the monitoring requirements specified above shall be taken at or near the outfall, but prior to mixing with the receiving stream.

10. (a) Monthly pass/fail static-renewal 3-brood chronic Ceriodaphnia dubia toxicity tests shall be conducted on a solution of 72% effluent from Outfall 001 in accordance with the most recent Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 2nd ed. (EPA/600/4-89/001) and South Carolina Procedures for Pass/Fail Modifications of the Ceriodaphnia 48 hour Acute Toxicity Test and Ceriodaphnia Survival and Reproduction Test (SCDHEC, May 1989), or superseding documents. The raw data and results shall be submitted in accordance with Part I.C.3 of the permit for each monthly test. The test must be performed by a SCDHEC certified laboratory.
 - (b) The permittee may substitute definitive toxicity tests for pass/fail tests. Definitive tests shall be conducted in accordance with the most recent Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 2nd ed. (EPA/600/4-89/001) and the most recent draft or edition of Methods for Conducting Whole Effluent Toxicity Tests in South Carolina (SCDHEC).
 - (c) If pass/fail test data provide statistically significant evidence at the 0.05 α level that the proportion of test group organisms that die is higher than the proportion of control group organisms that die, or that mean reproduction in the test group is lower than mean reproduction in the control group, the test shall be deemed a failure.
 - (d) If the regression of definitive toxicity test data predicts greater than 20% mortality in 72% effluent, or a reduction in reproduction greater than 20% in 72% effluent, and the toxicity test data provide statistically significant evidence at 0.05 α level that the slope of the regression line is greater than 0, the test shall be deemed a failure.
 - (e) After passing 3 consecutive tests, the permittee may make a written request that the frequency of analysis for toxicity be reduced from monthly to quarterly. Page 3 of this permit shall expire, and page 4 shall become effective on the first day of the month after the Department informs the permittee in writing that frequency of analysis for toxicity has been changed to quarterly.
11. A 2C NPDES Application Form shall be completed and submitted to SC DHEC within 120 days of the initial discharge of treated groundwater. The permittee shall analyze for all parameters in Item V. , Parts A, B, and C. Significant variation from anticipated levels of pollutants present may result in this permit being modified or revoked and reissued to incorporate additional parameters and limitations.
 12. Once the wastewater treatment plant has successfully operated and consistently met limits for a period of six (6) consecutive months, the permittee may make application to reduce the monitoring frequency.

PUBLIC NOTICE
State of South Carolina
Department of Health and Environmental Control
Bureau of Water Pollution Control
2600 Bull Street
Columbia, South Carolina 29201
803/734-5300

Public Notice No. 93-310-M

Date: October 20, 1993

NOTICE OF PROPOSED ISSUANCE OF A
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

The following applicant has applied for a National Pollutant Discharge Elimination System (NPDES) permit to discharge treated wastewater into waters of the State of South Carolina. The proposed NPDES permit contains effluent limitations on the amounts of pollutants allowed to be discharged, based upon preliminary staff review and application of the Federal Clean Water Act, the Pollution Control Act of South Carolina, and other lawful standards and appropriate regulations. The pollutant limitations and other permit conditions are tentative and open to comment from the public.

APPLICANT: MEDLEY FARMS NPL SITE (CHEROKEE/APPALACHIA 111), NPDES permit #SC0046469, P. O. BOX 16778, GREENVILLE, SC 29606-6778. The proposed facility has 1 discharge: 001-treated groundwater; Standard Industrial Classification (SIC) Code 4953. The facility is located at Gaffney, South Carolina, Cherokee County. The effluent from the proposed facility will discharge to the Jones Creek. The receiving stream is classified Class FW: freshwaters suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment in accordance with the requirements of the Department. Suitable for fishing and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. Suitable also for industrial and agricultural uses.

Persons wishing to comment on or object to permit issuance or to the proposed permit limitations and conditions are invited to submit same in writing within thirty (30) days of the date of this notice to the attention of: BUTCH SWYGERT, South Carolina Department of Health and Environmental Control, Bureau of Water Pollution Control, 2600 Bull Street, Columbia, South Carolina 29201. The permit number should be placed at the top of the first page of comments. Where there is a significant degree of public interest in a proposed permit or group of permits, the Department of Health and Environmental Control Commissioner will hold a public hearing.

All comments received within the 30-day period will be considered in the formulation of final determinations regarding the permit. If the determinations are substantially unchanged from those announced by this Notice, all persons submitting written comments will be so notified. If the determinations are substantially changed, a Public Notice will be issued indicating the revised determinations. Requests for adjudicatory hearings may be filed after the above described determinations have been made. Additional information regarding adjudicatory hearings is available from the Legal Office at the above Department address or by calling 803/734-4910.

Additional information on proposed permit determinations and on hearing procedures is available by writing or calling the Department at the above address or telephone number. Copies of a specific application or draft permit of interest to an individual, organization, or company must be requested in writing. A fee schedule has been established for processing these requests: Reproduction of documents (per page) - \$0.25. All information pertaining to NPDES applications and draft permits is available for review and copying at Room 402, Aycock Building, 2600 Bull Street, Columbia, South Carolina, between the hours of 8:30 a.m. and 5:00 p.m., Monday through Friday. A copying machine is available for public use at a charge of \$0.25 per page.

Please bring the foregoing to the attention of persons you know will be interested in this matter.

APPENDIX E
SC DHEC STORM WATER PERMITTING WAIVER,
DATED JULY 30, 1993

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Interim Commissioner: Thomas E. Brown, Jr.

Board: John H. Burriss, Chairman
Richard E. Jabbour, DDS, Vice Chairman
Robert J. Stripling, Jr. Secretary

William E. Applegate, III,
Toney Graham, Jr., MD
Sandra J. Molander
John B. Pate, MD

Promoting Health, Protecting the Environment

July 30, 1993

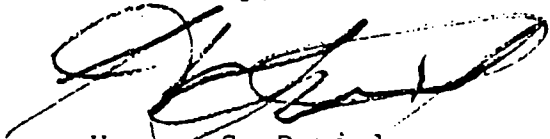
Jeffrey A. Friend
Permitting Specialist
RMT, Inc.
100 Verdae Blvd.
P.O. Box 16778
Greenville, S.C. 29606

Subject: NPDES Storm Water Permitting Requirements at
Medley Farm NPL Site

Dear Mr. Friend:

This letter is in response to your January 20, 1993, letter to Mr. Arturo Ovalles, Storm Water Permitting, Bureau of Water Pollution Control, Re: Waiver Request for Storm Water Permitting at Medley Farm NPL Site. After further review, it has been determined that a SCDHEC NPDES Storm Water Permit at the Medley Farm NPL Site will not be required at the present time (see July 30, 1993, memorandum from the author to Medley Farm NPL Site File (attached)). Thank you for your cooperation in this matter.

Sincerely,



Harvey S. Daniel
Environmental Quality Manager
Storm Water Permitting
Bureau of Water Pollution
Control

Attachment:

cc: Arturo Ovalles, Manager
Storm Water Permitting

MEMORANDUM

TO: Medley Farm NPL Site File

FROM: Harvey S. Daniel *HS Daniel*
Storm Water Permitting
Bureau of Water Pollution Control

SUBJECT: SCDHEC NPDES General Storm Water Permit
Requirements at the Medley Farm NPL Site

DATE: July 30, 1993

Discussions with Butch Swygert, NPDES Permitting, and Richard Haynes, SCDHEC Project Manager for the Superfund remediation at the Medley Farm NPL Site, reveal that the site does not require a SCDHEC NPDES General Storm Water Permit.

According to Mr. Haynes, all above ground contaminants at the site have been removed, and contaminated soil has been removed to a depth of at least four to five feet and replaced with clean soil. Therefore, the site does not require a permit in that there are no "....existing point source discharges of storm water associated with industrial activity to waters of South Carolina....", as specified by Part I.B.1 of the SCDHEC NPDES General Permit for Storm Water Discharges Associated With Industrial Activity (except construction activity) (Permit No. SCR000000).

According to Mr. Swygert, the site is fully covered with grass. Therefore, the site does not require a permit in that it is considered that the site has undergone final stabilization, as specified by Part I.B.3.a of the SCDHEC NPDES General Permit for Storm Water Discharges From Construction Activities That Are Classified As "Associated With Industrial Activity" By EPA Regulation (Permit No. SCR100000).

cc: Arturo Ovalles, Manager, Storm Water Permitting
Butch Swygert, NPDES Permitting
Richard Haynes, Site Engineering, Bureau of Solid &
Hazardous Waste Management
Cindy Mason, Hazardous Waste Consultant,
Appalachia III District
Scott Anderson, NPDES Permitting,
Appalachia III District
Jeffrey L. Friend, Permitting Specialist, RMT



RMT, Inc.
100 Vercze Blvd.
P.O. Box 16778
Greenville, SC 29606
Phone: 803-281-0030
FAX: 803-281-0288

January 20, 1993

Mr. Arturo Ovalles
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Subject: Waiver Request for Storm Water Permitting at Medley Farm NPL Site

Dear Mr. Ovalles:

This letter presents RMT's rationale for waiving requirements for storm water permitting at the Medley Farm NPL site located near Gaffney, South Carolina. The Medley Farm site is a CERCLA project that is presently in the remedial design phase under the oversight Messrs. Ralph Howard (US EPA Region IV) and Richard Haynes (SC DHEC).

BACKGROUND

During a May 3, 1983 site visit, SC DHEC officials observed a large number of 55-gallon drums containing unknown chemical residuals present on the Medley Farm site. Subsequent soil sampling revealed the presence of volatile organic constituents, semi-volatile organic compounds and low levels of PCBs. Pursuant to Section 104 of CERCLA, the US EPA (on June 20, 1983) conducted an immediate removal action involving the drummed wastes, bulk liquids, and affected soils. As a result of this action, more than 5,000 drums of waste, nearly 70,000 gallons of bulk liquids, and more than 2,100 cubic yards of affected soil were removed and transported for off-site treatment and disposal.

Following completion of a RI/FS, only volatile organic compounds have been detected at concentrations above EPA-established clean-up targets in the surface soils and ground water of the Medley Farm site. Site remediation, as prescribed by the US EPA's Record of Decision (ROD), will consist of a ground water recovery and treatment system and a soil vapor extraction (SVE) system. The specific process technologies to be employed at this site involve only air-stripping and vacuum extraction of volatile organics from the ground water and affected soils.

The ROD calls for discharge of the treated ground water to Jones Creek, at a point just above its confluence with Thicketty Creek. SC DHEC has recently approved a variance request for discharge of air emissions direct to the atmosphere from the air-stripper and SVE unit without additional treatment. The Preliminary Design Report for the Medley Farm site has been reviewed and approved by both the US EPA and SC DHEC (reference attached letter dated December 23, 1992).

PROCESS DESCRIPTION

An NPDES permit application has been filed with Mr. Marion Sadler of SC DHEC to address the required outfall for discharge of ground water that has been extracted from the sub-surface and air-stripped for removal of volatile organic compounds (VOCs). VOCs are the only constituents of concern at this site and have been confirmed at levels in the ground water which are very amenable to air-stripping. We have also previously transmitted copies of the Medley Farm Preliminary Design Report (PDR) to Mr. Richard Haynes and Mr. Sadler for their reference and use.

Mr. Arturo Ovalles
S.C. Department of Health and Environmental Control
January 20, 1993
Page 2

The PDR calls for removal of affected ground water from the subsurface using a system of jet-pump extraction wells. RMT has successfully utilized this approach at a number of permitted sites around the State. This general treatment concept is depicted in Drawing No. 938-C04, which is attached for your review. Basically, each individual jet-pump extraction well is piped to a central manifold pipeline that forms a loop with a centrally-located pumping station. Ground water is extracted and piped to an air-stripper, where the VOCs are removed from the ground water.

Similarly, soil vacuum extraction is accomplished by application of a vacuum through wells screened across soil intervals where VOC effects have been previously documented. The soil gas removed in this manner contains VOCs from the affected soils, that is in turn piped to the vacuum system and exhausted to the atmosphere. SC DHEC has issued a de minimis permitting exemption for air emissions at this site.

Neither of the treatment systems that will be used at this site will utilize process chemicals of any type. This site remediation will involve only physical treatment of the affected soils and ground water.

PERMITTING

RMT recognizes that the Medley Farm site meets the definition of a site addressed by 40 CFR 122.26(b)(14)(v), *Landfills, land application sites, and open dumps*. For this reason, the discharge of storm water from the site must be considered. However, in view of the US EPA's emergency source removal action, the lack of process chemical usage during the RD/RA, SC DHEC's issuance of an air emissions waiver and the dense nature of the surface vegetative cover present at the site, it is RMT's opinion that a storm water discharge permit should not be required. We base this position on the following technical reasons:

- There will be no sources that could result in storm water contamination at the site (i.e. material handling equipment, waste storage areas, etc.). All of the ground water and soil treatment equipment is designed for outdoor service and is self-contained. Since the Constituents of Concern (COCs) for the site are VOCs, it is unreasonable for one to presume that COCs might appear in detectable quantities in storm runoff. It is also our belief that Congress did not intend that the term storm water be used to describe a site discharge containing a *de minimis* amount of pollutants (55 FR 222, p. 47995).

The rulemaking cited above only covers storm water discharges from point sources (55 FR 222, p. 47996). Since the Medley Farm site is densely vegetated with an established grass cover, it is basically just a pasture with no defined point source or storm water conveyances as defined by 40 CFR 122.

For these reasons, RMT feels that the requirement for a storm water discharge permit at the Medley Farm site is not necessary. To impose this permitting requirement on this site presents an unnecessary regulatory burden on a site that has negligible potential to impact the environment through this type of discharge.

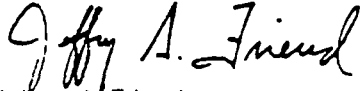
Since the Medley Farm Remedial Design is underway, it is imperative that this request receive your prompt attention. If you have any questions or require further information, please contact either Dr. Steve Webb or me at your earliest possible convenience.

Mr. Arturo Ovalles
S.C. Department of Health and Environmental Control
January 20, 1993
Page 3

Thank you for your attention into this matter and I look forward to hearing from you soon.

Sincerely,

RMT, Inc.



Jeffrey A. Friend
Permitting Specialist

Attachments

cc: Mr. Marion Sadler
Mr. Andy Yasinsac
Medley Farm Site Steering Committee Distribution
File 938.08 (C)

APPENDIX F
SC DHEC AIR QUALITY EMISSIONS WAIVER,
DATED DECEMBER 29, 1992

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Interim Commissioner: Thomas E. Brown, Jr.

Board: John H. Burris, Chairman
Richard E. Jabbour, DDS, Vice Chairman
Robert J. Stripling, Jr., Secretary

Promoting Health. Protecting the Environment

William E. Applegate, III,
Toney Graham, Jr., MD
Sandra J. Molander
John B. Pate, MD

December 29, 1992

Mr. David Robb, Project Engineer
RMT, Inc.
P.O. Box 16778
Greenville, SC 29606

Dear Mr. Robb:

The Bureau of Air Quality Control has reviewed the emission information for the proposed Air Stripper and Soil Vapor Extraction System to be located at Medley Farm NPL Site in Gaffney, S.C. Air Dispersion Modeling results indicate that the air toxic emitted (1,1 Dichloroethene) will not result in off-site air concentrations exceeding our Air Toxic Standards (Standard No. 8). Furthermore, since the potential emissions do not exceed 1000 lbs/month, an Air Permit will not be required for the Air Stripper and Soil Vapor Extraction System. This is in accordance with Section I, Part B of Regulation No. 62.5, Standard No. 8.

Sincerely,



Rhonda H. Banks, Permit Engineer
Engineering Services Division
Bureau of Air Quality Control

cc: Ronald Garrett, Appalachia III District
Richard Haynes, SC DHEC

AIR DISPERSION MODELLING SUMMARY SHEET

PROJECT NAME: Medley Farm NPL Site

DATE: 22 December 1992

LOCATION : Gaffney

REVIEWED BY: KJC

PERMIT NO. :

MODEL USED : Screen

MODELLED FOR: NAAQS COMPLIANCE
 X AIR TOXIC

 PSD INCREMENT

SOURCES MODELLED: Air Stripper

MODELLING DESCRIPTION:

RESULTS:

POLLUTANT	AVG. TIME	MAX. MODELLED CONCENTRATION ug/m ³	BACKGROUND CONCENTRATION ug/m ³	TOTAL ug/m ³	STANDARD ug/m ³
-----------	-----------	---	--	----------------------------	-------------------------------

1,1 Dichloroethene (CAS #75354)

24 Hour

1.0

N/A

1.0

99

APPENDIX G
LIST OF MEDLEY FARM SITE
PROJECT SPECIFICATIONS
DIVISION 1 THROUGH 16

TECHNICAL SPECIFICATIONS
for
MEDLEY FARM
SITE REMEDIATION
FINAL REMEDIAL DESIGN REPORT

Gaffney, South Carolina

Prepared by:

RMT, Inc.
100 Verdae Blvd.
Greenville, SC

NOTE: These Specifications are accompanied by Plans of the same title. These documents are interrelated and intended to be used together.

DIVISION 1

01010	Summary of Work
01050	Field Engineering
01105	Monitoring Well Protection
01300	Submittals
01410	Laboratory Quality Control
01500	Construction Facilities and Temporary Controls

DIVISION 2

02030	Drilling, sampling, and Well Installation
02102	Clearing and Grubbing
02201	Excavation
02221	Trench Excavation, Backfill, and Compaction
02230	Fill
02272	Geotextile Fabrics for construction
02273	Riprap
02444	Chain Link Fence
02511	Aggregate Base Course
02605	Manholes and Cleanouts
02606	Metering Manhole
02614	Ductile Pipe and Fittings
02615	Pressure Pipe - Schedule 40 & 80 PVC
02620	Jet Pump Systems (ejector, fittings, hose, check valve, pitless adapter)
02641	Valves (ball, globe, check, air release)
02730	Gravity Pipe (PVC)
02921	Topsoil
02931	Seeding
02935	Fertilizing

DIVISION 3

(will be handled by notes on drawings)

DIVISION 11

11510	Centrifugal Pumps
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DIVISION 13

13208	Tanks (fiberglass filament wound)
13235	Air Stripping Tower (tray type) (Skid mounted, Blower, level and pressure switches)

DIVISION 15

15260	Pipe Insulation
15489	Vacuum Extraction Equipment (condensate trap, filter, air intake/filter, inlet/outlet silencers, vacuum relief valve, vacuum pump, piping, discharge stack)

REV 01.0893

wp9\93811.med/cdf93

Proj. # 938.11

DIVISION 16 - ELECTRICAL

16111	Conduit
16123	Wire and Cable
16130	Boxes
16170	Grounding and Bonding
16190	Supporting Devices
16195	Electrical Identification
16421	Utility Service Entrance
16470	Distribution Panelboards
16481	Enclosed Motor Controllers
16855	Heating Cables

APPENDIX H
LIST OF MEDLEY FARM SITE DRAWINGS

LIST OF MEDLEY FARM SITE DRAWINGS

<u>DRAWING NUMBER</u>	<u>DRAWING TITLE</u>
938 - CO1	Title Sheet
938 - C02	Existing Site Conditions
938 - C03	General Arrangement - Ground Water Treatment
938 - C04	Process Flow Diagrams
938 - C05	General Arrangement - Soil Vapor Extraction System
938 - C06	Grading and Drainage Plan - System A
938 - C07	Grading and Drainage Plan - System B
938 - C08	Underground Piping Plan - System A
938 - C09	Underground Piping Plan - System B
938 - C10	Pump Pad and Diffuser - Sections and Details
938 - C11	Soil Vapor Extraction System and Jet Pump Details
938 - C12	Miscellaneous Details
938 - C13	Process Flow Diagram Standard Symbol
938 - S01	Slab and Roof Framing Details
938 - S02	Sections and Details
938 - E01	Single Line and Panel Schedule
938 - E02	Conduit and Cable Plan - Site
938 - E03	Conduit and Cable Plan - Pad
938 - E04	Control Panel Layout
938 - E05	PLC Ladder Diagram
938 - E06	PLC Ladder Diagram
938 - I01	Instrument Location Plan

APPENDIX I

RMT TECHNICAL MEMORANDUM, DATED DECEMBER 22, 1993

December 22, 1993

Mr. Ralph O. Howard, Jr.
Remedial Project Manager
US EPA, Region IV
345 Courtland Street
Atlanta, Georgia 30365

SUBJECT: Technical Memorandum Regarding the Installation of the Multi-Level Monitoring Wells;
Medley Farm RD/RA; Gaffney, SC

Dear Ralph:

Data collected during the RD indicates that there are significant differences in the geologic and hydrologic characteristics on site. The data further suggests a likelihood that these subsurface conditions are controlling the transport of VOCs on site. In order to evaluate the ground water extraction system, monitor changes in ground water flow and water quality conditions resulting from ground water withdrawal, and assess EPA and SC DHEC concerns regarding deep bedrock contamination, an additional bedrock sampling interval is proposed to supplement the multi-level well design presented in the Medley Farm PSVP.

Three Waterloo multi-level monitoring wells are proposed to supplement the existing on-site monitoring well control. These multi-level wells will be installed at the locations shown on Plate 3-1, of the Performance Standard Verification Plan (PSVP). As shown in the attached schematic, these wells will be constructed to isolate up to four discrete zones within the aquifer (saprolite, transition zone, shallow bedrock, and deep bedrock). Sampling intervals will be equipped with dedicated sampling pumps and pressure transducers to facilitate the collection of ground water samples and record changes in water levels within each interval. Monitoring well installation procedures and construction materials are provided in the Medley Farm PSVP.

MULTI-LEVEL WELL INSTALLATION

The design and depth of the multi-level monitoring wells is intended to meet specific performance monitoring objectives and still be compatible with the hydrogeologic setting. For these reasons, multi-level well, MLW-1, will be installed first. This well will be installed at the location shown on Plate 3-1 of the PSVP. As shown on the attached sketch (cross-section B-B'), this well will be constructed to monitor four discrete zones. Since the water table most likely occurs in the transition zone at this location, this well will be constructed to monitor the upper and lower transition zone and the shallow and deep bedrock. The shallow bedrock sampling port will be set within the upper twenty feet of competent bedrock. This sampling port will be set opposite the first producing fracture identified. To address EPA and SC DHEC concerns regarding deep bedrock affects, a deep bedrock interval will be added. For multi-level well MLW-1, the deep bedrock interval will be defined as the elevation of the midpoint of the open hole interval in existing deep bedrock well BW-112, approximately 190 feet below land surface (450 feet above mean sea level).



RMT, INC. — GREENVILLE, SC
100 VERDAE BOULEVARD - 29607-3825
P.O. Box 16778 - 29606-6778
803/281-0030 - 803/281-0288 FAX

Mr. Ralph O. Howard, Jr.
December 22, 1993
Page 2

Multi-level well MLW-3 will be the next well to be installed. Similar to well MLW-1, MLW-3 will be constructed to isolate four discrete zones. As shown in the attached cross-section A-A', multi-level well MLW-3 will also be constructed across saprolite, transition zone, shallow bedrock, and deep bedrock monitoring intervals. For well MLW-3, the deep bedrock monitoring interval will be defined as the elevation of the bottom of existing well BW-108.

Following installation of multi-level wells, MLW-1 and MLW-3, two rounds of ground water samples will be collected. The design and depth of multi-level well MLW-2 will be determined on the basis of these ground water quality results.

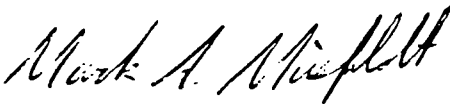
In addition to water quality and water level data from multi-level wells, MLW-1 and MLW-3, a packer will be set in existing deep bedrock well BW-111. The packer will be set at the bottom of the surface casing (189 feet below land surface) to isolate the open hole portion of the well. Water level measurements from this well combined with data from wells MLW-1 and MLW-3 will be used to map the deep bedrock potentiometric surface. This information will be used to enhance RMT's understanding of ground water flow conditions in bedrock.

These modifications to the multi-level wells have been proposed to address evaluation of the ground water recovery system during remedial action. Based on our telephone conference on December 8, 1993, the multi-level wells as proposed herein are intended to address EPA and SC DHEC concerns regarding deep bedrock affects.

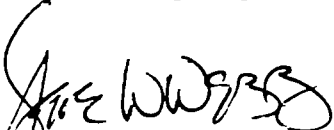
Ralph, if you have any questions or comments about this technical memorandum, please call either of us at 803/281-0030.

Happy Holidays,

RMT, INC.

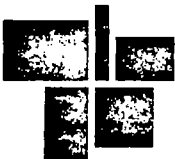


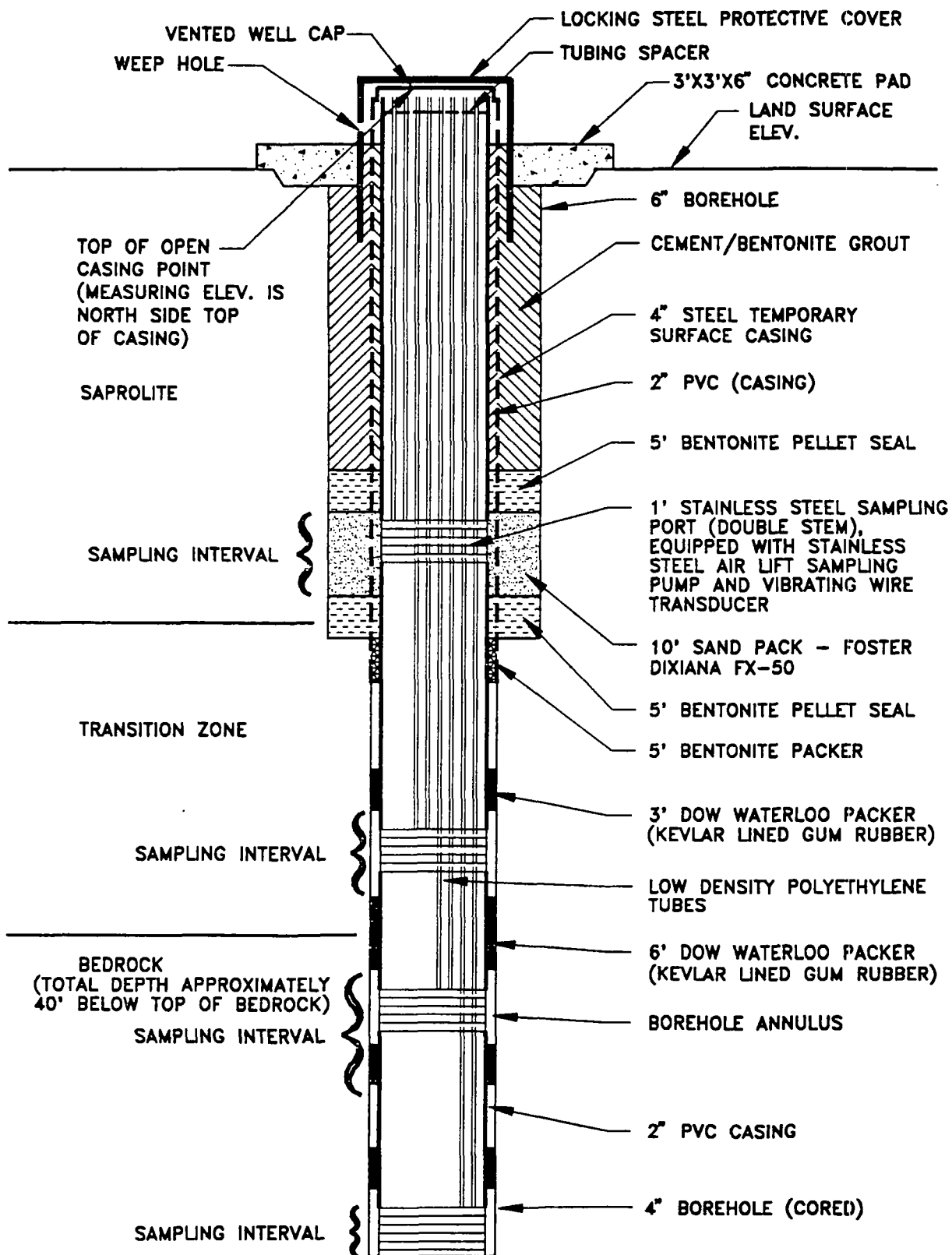
Mark A. Miesfeldt
Project Hydrogeologist



Steve W. Webb, Ph.D., P.E.
Project Manager

cc: Medley Farm Distribution List
File: 938.19 (c)





WATERLOO MULTI-LEVEL WELL SCHEMATIC

Not To Scale

RMT^{INC.}

SDMS

Unscannable Material Target Sheet

DocID: 16292901 Site ID: SCD 980558142

Site Name: Medley Farms

Nature of Material:

Map:

X

Computer Disks:

Photos:

CD-ROM:

Blueprints:

Oversized Report:

Slides:

Log Book:

Other (describe):

Hydrogeologic Cross Section A-A' and B-B'
showing Proposed Multi-Level Well Design
(1)

Amount of material:

Please contact the appropriate Records Center to view the material.

APPENDIX J
US EPA REMEDIAL ACTION WORK PLAN APPROVAL LETTER,
DATED JANUARY 31, 1994



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

January 31, 1994

4WD-NSRB

Ms. Mary Jane Norville
King & Spalding
191 Peachtree Street
Atlanta, Georgia 30303-1763

SUBJ: EPA Review and Approval of the Remedial Action Work Plans
Medley Farm Superfund Site, Gaffney, Cherokee County, SC

Dear Ms. Norville:

EPA has completed its review of the RA Work Plans for the Medley Farm Site. The RA Work Plans include the RA Work Plan, the Construction Management Plan, the Construction Quality Assurance Plan. By this letter, the Plans are approved, subject to the corrections noted in the set of comments enclosed with this letter. The comments should be addressed by having your consultant, RMT, revise the affected pages and send in the revised Plans in one or more 3-ring binders.

A major issue of concern to EPA and the South Carolina Department of Health and Environmental Control (SCDHEC) has been the need to ensure appropriate long-term monitoring of groundwater in bedrock. To address these concerns, RMT submitted a technical memorandum (TM) dated December 22, 1993, concerning the proposed depths of well installation and screened intervals for the multi-level monitoring wells ("MLWs"). Appropriate groundwater monitoring using the MLWs is crucial to successfully implementing the RA, and is therefore discussed in the remainder of this letter.

The December 22, 1993 TM partially satisfies our concerns, particularly with regard to MLW-1. However, EPA and SCDHEC review of the approach outlined in the TM raised these issues:

1. Placing the bottom of MLW-3's deepest screened interval at 123 feet below land surface (bls), as proposed in the TM, would not result in gaining knowledge about any groundwater occurring below the zone screened in well BW-108, which does show contamination. This depth cannot be considered "deep bedrock" as it is referred to in the TM.
2. The potentiometric map described in the TM is appropriate and should, at some point, be prepared. However, any 3- or 4-point piezometric maps constructed using wells BW-111 and/or BW-112, and the deep intervals of MLW-1 and MLW-3, assuming MLW-3 was screened as proposed, would be inaccurate due to the approximately 90-foot

interval or gap between the screened depths of MLW-1 and MLW-3. More meaningful results will be gained if the interval represented by such piezometric measurements is made narrower than this.

For these reasons, the deepest interval in MLW-3 must be at least somewhat deeper than proposed. However, EPA believes that the decision as to how much deeper it should be, should not be made yet. The maximum practical depth to be considered would place the interval bottom at 188 feet bls, or 455 feet elevation above mean sea level (MSL), rather than at 123 feet bls as proposed. This corresponds to the top of the open hole interval in BW-112, and would satisfy our objective of ensuring that a deep interval likely to correspond to the open hole in BW-112, is monitored. However, this placement also has certain disadvantages and may not be the best course of action.

After careful consideration, EPA has reached the following decisions concerning the MLWs:

1. MLW-1 should be installed as described in the TM.
2. EPA will defer the decision on an appropriate MLW-3 deep interval depth until information developed from installing the extraction wells and MLWs, or from other activities, can be considered. As a minimum, the deep interval must be at least 20 feet deeper than currently proposed (bottom at 143 feet bls, or 490 feet elevation), in order to screen a zone different and deeper than that screened in BW-108.
3. Concerning the depth and configuration of MLW-2, EPA agrees with the approach suggested in the December 22nd TM; i.e. that this decision will be made after MLW-1 and MLW-3 are installed, using all available information to include sample results from MLWs 1 and 3.
4. The installation of the extraction wells and MLWs should be performed with a "side" objective of providing enough data to serve as a basis for judging whether deep bedrock groundwater (at depths corresponding to the BW-112 interval) is contaminated, and if so, to what degree.

RMT has indicated that installation of the extraction wells and MLWs will generate more extensive information on transition zone and bedrock depth, bedrock characteristics, and fracture occurrence. EPA agrees that such information is needed to properly locate the monitored/screened intervals in the MLWs, but data bearing on the BW-112/deep bedrock question may not be gained. Measures which have been previously discussed which could provide such data, and could be undertaken at RMT's discretion, include the following:

- Quick-turnaround sampling from the deepest interval in MLW-1, which will be located only 150 feet from well BW-112.
- As described in the TM, taking potentiometric measurements from BW-111, BW-112 (using a packer to isolate the open borehole) and MLW-1, to gain preliminary information on the direction of deeper groundwater flow. However, this would be done after installing MLW-1 but prior to drilling the borehole for MLW-3. This information could provide support for judging the value of any analytical data from the deep interval of MLW-1, and for evaluating the possibility that any deep groundwater contamination (if present) could escape detection due to an unexpected flow direction.

EPA will not dictate a specific approach to solving the questions presented by the anomalous results from BW-112. The initial step to be taken by constructing MLW-1 as described in the TM is appropriate, and in conjunction with some or all of the measures listed above, or others, may be enough to resolve whether contamination is actually present deeper in the bedrock or not.

EPA will make a decision as to the appropriate deep screened interval in response to a formal (tech memo) or informal request from RMT, at a point in the scheduled work to be designated by RMT, and will document the decision in writing. RMT has informally advised us that any effects on the schedule will be minimal and that sufficient "cushion" probably exists in the present schedule to complete various side activities as they feel necessary.

For the record, EPA wishes to emphasize that our concerns regarding deep bedrock, and the actions which have been and are being discussed to address them, are intended to ensure that the groundwater capture and treatment system is constructed using the fullest understanding of the Site's hydrogeology. Monitoring of the deepest screened intervals in wells MLW-1 and MLW-3 provides EPA, SCDHEC, and the Steering Committee with assurance that the present understanding of Site hydrogeology is, in fact, as complete as possible, and that significant contamination is not escaping the remediation effort. Such assurance is crucial to implementing a fully successful remedy for the Site as required by the ROD and Consent Decree.

Please call me at (404) 347-7791 if you have any questions concerning this or any aspect of the project.

Sincerely,


Ralph O. Howard, Jr.
Remedial Project Manager

Enclosure

cc: Jan Rogers, 4WD-NSRB
Richard Haynes, SCDHEC
Jim Bowman, SCDHEC
Jennifer Herndon, 4WMD-GWP
Steve Webb, RMT Inc.

RA Work Plans (incl. Construction Mgmt and Constr. QA Plans)

1. Page 2-1, section 2.1.1, fourth bullet:
The list of parties involved in coordination for the Site should name SCDHEC, possibly specified as the regulatory support agency to EPA, the lead agency on the Medley Site.
2. Page 2-3, section 2.2.1, first bullet:
The text should refer the reader to the fact that terms such as "RA Construction Manager" are described, and names assigned with the positions, in section 3 of the document.
3. Page 2-5, entire section 2.3:
This section should be updated to include the recent discussions and decisions on the well installations.
4. Page 2-7, Figure 2-1:
The figure, although schematic in nature, should show the elements required by EPA's Standard Operating Procedures and Quality Assurance Manual (Env. Services Div., US EPA Region IV, Athens, GA, 2/1/91 plus updates). These include the minimum 12-inch bentonite seal, and the minimum height of filter sand above screen.
5. Page 3-13, section 3.4.2:
The text should make clear what is called for in the Consent Decree, i.e. monthly reports by the 10th day of each month.

Construction Health and Safety/Contingency Plan

6. Page 7-1, list of equipment:
These items are to be provided or utilized, not worn (fire extinguishers, wash water, etc.).
7. Page 7-1, section 7:
Somewhere here it should be noted where the wash water and decon items are located (i.e. at the designated decon area as per section 11, or wherever work is occurring).
8. Section 8:
The section on heat/cold stress is fine, but this or another section should address physical Site hazards such as snakes, ticks, bees, etc. (During the RI one guy was stung 29 times.)
9. Section 9:
Accident prevention could be mentioned as an item that is to be included in each morning's "tailgate" meeting.
10. Page 13-3, bottom, directions to medical center:
Distance (miles) and driving time should be given.

APPENDIX K
DAILY COST AND SCHEDULE REPORT

DAILY COST AND SCHEDULE REPORT

CONTRACTOR _____ DATE _____

PROJECT Medley Farm Site PROJECT NO. _____

CLIENT Medley Farm Site Steering Committee	DAY	S	M	T	W	TH	F	S		
LOCATION Gaffney, South Carolina	WEATHER	Bright Sun	Clear	Overcast	Rain	Snow				
REPORT PREPARED BY	TEMP.	To 32	32-50	50-70	70-85	85 Up				
SIGNATURE	WIND	Low	Med.	High	Page No.					
	HUMIDITY	Dry	Mod.	Humid						

WORK COMPLETED TODAY:

PROGRESS SCHEDULE STATUS: (LIST ALL PRESENT ACTIVITIES)			
ACTIVITY DESCRIPTION	SCHEDULED COMPLETION	SCHEDULE STATUS DAYS AHEAD (+) DAYS BEHIND (-)	ACTIONS REQUIRED

PROGRESS SCHEDULE COMMENTS:

DAILY LUMP SUM COST SUMMARY (FROM SCHEDULE OF VALUES)			
WORK ACTIVITY	TOTAL COST (\$)	% EST. COMPLETED	TOTAL (\$)
LUMP SUM WORK TOTAL FOR DAY			

DAILY UNIT PRICE COST SUMMARY					
ITEM NO.	DESCRIPTION	ACTUAL QUANTITIES	UNIT	UNIT PRICE (\$)	TOTAL (\$)
UNIT PRICE TOTAL FOR DAY					\$

TIME AND MATERIAL WORK SUMMARY

T&M LABOR SUMMARY					
ITEM NO.	NAME	DESCRIPTION	HOURS	RATE	TOTAL
TOTAL T&M LABOR COST FOR DAY					\$

T&M EQUIPMENT SUMMARY				
ITEM NO.	EQUIPMENT DESCRIPTION	BASIS: HOURLY OR DAILY	RATE	TOTAL
TOTAL T&M EQUIPMENT COST FOR DAY				\$

T&M - MATERIALS SUMMARY					
(Note: Attach Invoice/Receipts to Report)					
MATERIALS DESCRIPTION	QUANTITIES	UNITS	COST	% MARKUP	TOTAL
			\$		\$
TOTAL T&M MATERIALS COST FOR DAY					\$

COST SUMMARY FOR DAY		
1.0	Total Lump Sum Costs for Day	
2.0	Unit Price Total for Day	\$
3.0	Total T&M Labor Cost for Day	
4.0	Total T&M Equipment Cost for Day	
5.0	Total Materials Costs (attach invoices/receipts)	
TOTAL CUMULATIVE COST FROM PREVIOUS WORK DAY		\$
TOTAL COST FOR DAY		\$
CUMULATIVE TOTAL COST TO-DATE		\$

Received By: _____ Date _____

RA Construction Manager

Reviewed By: _____

RA Construction Manager

Approved By: _____

Medley Farm Site Steering Committee

ADDITIONAL COMMENTS:

(Signature)

(Title)

APPENDIX L
CONSTRUCTION QUALITY ASSURANCE FORMS

CQA Inspection Report

DATE: _____

PROJECT: _____ IQAT DISCIPLINE: _____

PROJECT NO.: _____ REPORT PREPARED BY: _____

CLIENT _____ REMEDIAL ACTION COORDINATOR _____

CONTRACTOR: _____ RESIDENT CQA ENGINEER: _____

REFERENCED DESIGN PLANS & SPECIFICATIONS:

MONITORING, INSPECTIONS, & TESTING PERFORMED:

DISCREPANCIES & NONCONFORMANCES:

NOTIFICATIONS & CORRECTIVE ACTIONS

TESTING RESULTS (include CQA laboratory)

ADDITIONAL COMMENTS:

ATTACHMENTS INCLUDED:

SIGNED: _____

IQAT Member

DAILY CQA REPORT

DATE: _____

PROJECT

PROJECT NO.

CLIENT

CONTRACTOR

REMEDIAL ACTION COORDINATOR

REPORT PREPARED BY

STATUS OF PROJECT (in relation to schedule)

WORK FORCE (include contractors, IQAT members, US EPA, others)

EQUIPMENT AT SITE (Identify in use or idled)

MATERIALS OR EQUIPMENT DELIVERED:

WORK IN PROGRESS:

DAY	S	M	T	W	TH	F	S	
WEATHER		Bright Sun	Clear	Overcast		Rain	Snow	
TEMP.		To 32	32-50	50-70		70-85	85 Up	
WIND		Low	Med.	High		Page No.		
HUMIDITY		Dry	Mod.	Humid				

DAILY CQA REPORT

PROJECT	PROJECT NO.	DATE	REPORT NO.	PAGE NO.
---------	-------------	------	------------	----------

INSPECTIONS PERFORMED (include any test results):

DISCREPANCIES OR NON-CONFORMANCES:

MEETING DESCRIPTION (include time and those in attendance)

ADDITIONAL COMMENTS:

ATTACHMENTS INCLUDED:

SIGNED: _____

Resident CQA Engineer

LOG OF TEST BORING

BORING NO. _____

SHEET NO. _____ OF _____

PROJECT NO. _____

INSTALLATION

SURFACE ELEV. _____

BOREHOLE DIA. _____

PROJECT NAME _____

LOCATION _____

CONTRACTOR _____

DRILLING METHOD _____

SAMPLING NOTES

VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS

[illegible]

GENERAL NOTES

DATE STARTED _____

DATE COMPLETED _____

RIG _____

CREW CHIEF _____

LOGGED _____ CHECKED _____

WATER LEVEL OBSERVATIONS

WHILE DRILLING _____

AT COMPLETION

AFTER DRILLING

CAVE-IN:DATE/TIME _____ DEPTH _____

WATER:DATE/TIME _____ DEPTH _____